

H	KOSHA Korea	Flameproof : Ex d IIC T4, T5, T6 Ex tD A21 IP66/IP67 T95°C...T120 °C	All	Note 1	T4: -50°C TO 85°C T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4	4-20 mA / DE/ HART	Note 2	Ta= -50 °C to 70°C
			Foundation Fieldbus	Note 2	Ta= -50 °C to 70°C
		Enclosure: IP66/ IP67	All	All	-
I	EAC Russia, Belarus and Kazakhstan	Flameproof: Ga/Gb Ex d IIC T6..T5 Ex tb IIIC Db T 85°C	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ga Ex ia IIC T4 X FISCO Field Device (Only for FF Option) Ga Ex ia IIC T4 X	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Non Sparking: 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ga Ex ic IIC T4 X FISCO Field Device (Only for FF Option) 2 Ex ic IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	
J	CCoE INDIA	Flameproof: Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Non Sparking Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
K	UATR UKRAINE	Flameproof: II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:

Voltage= 11 to 42 V DC

= 10 to 30 V (FF)

Current= 4-20 mA Normal

= 30 mA (FF)

2. Intrinsically Safe Entity Parameters

a. Analog/ DE/ HART Entity Values:

Vmax= Ui = 30V Imax= Ii= 105mA Ci = 4.2nF Li =984 uH Pi =0.9W

Transmitter with Terminal Block Revision E or Later

Vmax= Ui = 30V Imax= Ii= 225mA Ci = 4.2nF Li = 0 Pi =0.9W

Note : Transmitter with Terminal Block Revision E or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-001 or 50049839-002
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

b. Foundation Fieldbus- Entity Values

Vmax= Ui = 30V Imax= Ii= 180mA Ci = 0nF Li = 984 uH Pi =1W

Transmitter with Terminal Block Revision F or Later)

Vmax= Ui = 30V Imax= Ii= 225mA Ci =0nF Li = 0 Pi =1 W

FISCO Field Device

Vmax= Ui = 17.5V Imax= Ii= 380 mA Ci = 0nF Li = 0 Pi =5.32 W

Note : Transmitter with Terminal Block Revision F or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-003 or 50049839-004
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

Approval Certifications:

Marine Certificates	This certificate defines the certifications covered for the ST 800 Pressure Transmitter family of products, including the SMV 800 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications.	
	For ST 800 Smart Pressure Transmitter and SMV800 Smart Multivariable Transmitter	
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA	
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV	
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476	
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001	
SIL 2/3 Certification	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)	
	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.	
MEASUREMENT INSTRUMENTS DIRECTIVE (MID) 2004/ 22/ EC	Certificate Issued by NMI Certin B.V.	
	Mechanical Class: M3 Electromagnetic Environment: E3	
	Ambient Temperature Range: -25 °C to + 55 °C	
	Unit	Custom Calibration
	STD820	0 to 1000 mBar
	STD830	0 to 7 Bar
	STA84L	0 to 35 Bar A
	STG84L	0 to 35 Bar
	STD870	0 to 100 Bar
	STA87L	0 to 100 Bar A
	STG87L	0 to 100 Bar

Mounting & Dimensional Drawings

Mounting Configurations

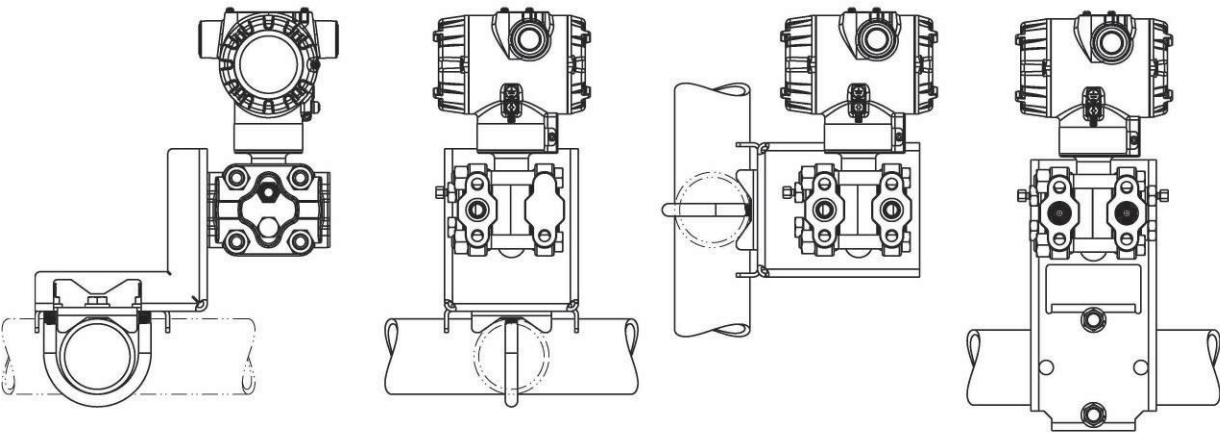


Figure 3 – Typical mounting configurations for STD810, STD820, STD830 and STD870 for reference

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

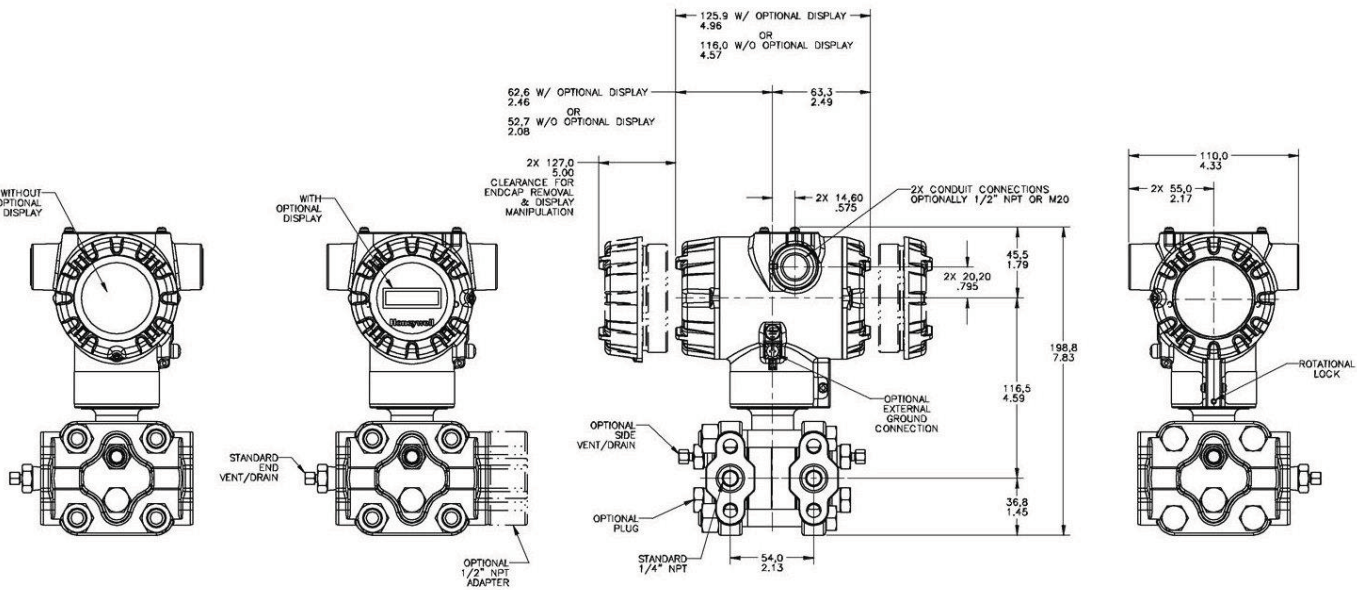


Figure 4 – Typical mounting dimensions of STD810, STD820, STD830 & STD870 for reference

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

Model STD800 Differential Pressure Transmitter

Model Selection Guide:
34-ST-16-82 Issue 25

Instructions: Make selections from all Tables Key through XIII using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key I II III IV V VI VII VIII (Optional) IX
 [STD ____] - [_____] - [_____] - [_____] - [_____] - [_____] - [_____] - [_____] - [_____] - [_____] - [0 0 0 0]

KEY NUMBER	URL	LRL	Max Span	Min Span	Units
Measurement Range	10 (25.0)	-10 (-25.0)	10 (25)	0.1 (0.25)	" H ₂ O (mbar)
	400/(1000)	-400/(-1000)	400/(1000)	1.0 (2.5)	" H ₂ O (mbar)
	100 (7.0)	-100 (-7.0)	100 (7.0)	1 (0.07)	psi (bar)
	3000 (210)	-100 (-7.0)	3000 (210)	30 (2.1)	psi (bar)

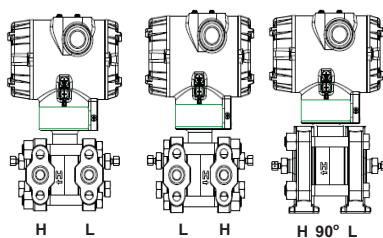
Selection	Availability			
STD810	↓			
STD820		↓		
STD830			↓	
STD870				↓

TABLE I	METER BODY SELECTIONS			
a. Process Wetted Heads & Diaphragm Materials	Process Head Material		Diaphragm Material	
	Plated Carbon Steel		316L Stainless Steel Hastelloy® C-276 Monel® 400 Tantalum Gold Plated Stainless Steel Gold Plated Hastelloy C-276 Gold Plated Monel 400	
	316 Stainless Steel		316L Stainless Steel Hastelloy C-276 Monel 400 Tantalum Gold Plated Stainless Steel Gold Plated Hastelloy C-276 Gold Plated Monel 400	
	Hastelloy C-276		Hastelloy C-276 Tantalum Gold Plated Hastelloy C-276	
	Monel 400		Monel 400 Gold Plated Monel 400	
b. Fill Fluid	Silicone Oil 200 Fluorinated Oil CTFE Silicone Oil 704 NEOBEE™ M-20			
c. Process Connection	None 1/2" NPT female	None (1/4" NPTF female thread Std) Materials to Match Head & Head Bolt Materials Selections ¹		
d. Bolt/Nut Materials	Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Monel K500 Super Duplex B7M			
e. Vent/Drain Type/Location	Head Type	Vent Type	Location	Vent Material
	Single Ended	None	None	None
	Single Ended	Standard Vent	Side	Matches Head Material ¹
	Single Ended	Center Vent	Side	Stainless Steel Only
	Dual Ended	Standard Vent	End	Matches Head Material ¹
	Dual Ended	Center Vent	End	Stainless Steel Only
Dual Ended	Std Vent/Plug	Side/End	Matches Head Material ¹	
f. Gasket Material	Teflon® or PTFE (Glass Filled) Viton® or Fluorocarbon Elastomer Graphite			
g. Static Pressure	Standard Static Pressure - 4500 psig (310 bar) except STD810: 50 psi (3.5 bar) High Pressure 6000 psi (415 bar)			

A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D		a	a	a
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H		a	a	a
4	*	*	*	*
5	*	*	*	*
6	*	*	*	*
J	*	*	*	*
K		a	a	a
7	*	*	*	*
L		a	a	a
8		a	a	a
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
4	*	*	*	*
A	*	*	*	*
H	*	*	*	*
C	*	*	*	*
S	*	*	*	*
N	*	*	*	*
K	p	p	p	p
M	p	p	p	p
D	p	p	p	p
B	*	*	*	*

1	*	*	*	*
2	*	*	*	*
3	t	t	t	t
4	*	*	*	*
5	t	t	t	t
6	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
S	*	*	*	*
H	k	k	k	k

¹Except Carbon Steel Heads shall use 316SS Vent/Drain, Plugs & Adapters when required



STD870
STD830
STD820
STD810

TABLE II	Meter Body & Connection Orientation	
Head/Connect Orientation	Standard	High Side Left, Low Side Right ² / Std Head Orientation
	Reversed	Low Side Left, High Side Right ² / Std Head Orientation
	90/Standard	High Side Left, Low Side Right ² / 90° Head Rotation

1	*	*	*	*
2	*	*	*	*
3	h	h	h	h

TABLE III	Agency Approvals (see data sheet for Approval Code Details)
Approvals	No Approvals Required
	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	ATEX Explosion proof, Intrinsically Safe & Non-incendive
	IECEX Explosion proof, Intrinsically Safe & Non-incendive
	SAEx Explosion proof, Intrinsically Safe & Non-incendive
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive
	EAC Customs Union(Russia,Belarus,Kazakhstan)Ex Approval, Flame proof, Intrinsically Safe
	CCoE Explosion proof, Intrinsically Safe & Non-incendive
	UATR Flameproof, Intrinsically Safe & Dustproof

0	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H	*	*	*	*
I	*	*	*	*
J	*	*	*	*
K	*	*	*	*

TABLE IV	TRANSMITTER ELECTRONICS SELECTIONS		
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection
	Polyester Powder Coated Aluminum	1/2 NPT	None
	Polyester Powder Coated Aluminum	M20	None
	Polyester Powder Coated Aluminum	1/2 NPT	Yes
	Polyester Powder Coated Aluminum	M20	Yes
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None
	316 Stainless Steel (Grade CF8M)	M20	None
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes
	316 Stainless Steel (Grade CF8M)	M20	Yes
b. Output/ Protocol	Analog Output		Digital Protocol
	4-20mA dc		HART Protocol
	4-20mA dc		DE Protocol
c. Customer Interface Selections	none		Foundation Fieldbus
	Indicator	Ext Zero, Span & Config Buttons	Languages
	None	None	None
	None	Yes (Zero/Span Only)	None
	Basic	None	English
	Basic	Yes	English
	Advanced	None	EN, GE, FR, IT, SP, RU, TU
	Advanced	Yes	EN, GR, FR, IT, SP, RU, TU
	Advanced	None	EN, CH, JP
	Advanced	Yes	EN, CH, JP

A__	*	*	*	*
B__	*	*	*	*
C__	*	*	*	*
D__	*	*	*	*
E__	*	*	*	*
F__	*	*	*	*
G__	*	*	*	*
H__	*	*	*	*

H	*	*	*	*
D	u	u	u	u
F	*	*	*	*

_0	*	*	*	*
_A	f	f	f	f
_B	*	*	*	*
_C	*	*	*	*
_D	*	*	*	*
_E	*	*	*	*
_H	*	*	*	*
_J	*	*	*	*

TABLE V	CONFIGURATION SELECTIONS		
a. Application Software	Diagnostics		
	Standard Diagnostics		
	Advanced Diagnostics (Above with Plugged Impulse Detection PILD)		
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³
	Disabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Disabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	N/A	N/A Fieldbus or Profibus
	Disabled	N/A	N/A Fieldbus or Profibus
c. General Configuration	Factory Standard		
	Custom Configuration (Unit Data Required from customer)		

1__	*	*	*	*
2__	*	*	*	*

1	f	f	f	f
2	f	f	f	f
3	f	f	f	f
4	f	f	f	f
5	g	g	g	g
6	g	g	g	g
_S	*	*	*	*
_C	*	*	*	*

² Left side/Right side as viewed from the customer connection perspective

³ NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

STD870
STD830
STD820
STD810

TABLE VI	CALIBRATION & ACCURACY SELECTIONS		
	Accuracy	Calibrated Range	Calibration Qty
a. Accuracy and Calibration	Standard	Factory Std	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration
	Standard	Custom (Unit Data Required)	Dual Calibration
	Standard	Custom (Unit Data Required)	Triple Calibration
	High Accuracy	Factory Std	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Dual Calibration
	High Accuracy	Custom (Unit Data Required)	Triple Calibration

A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E		s	s	s
F		s	s	s
G		s	s	s
H		s	s	s

TABLE VII	ACCESSORY SELECTIONS	
	Bracket Type	Material
a. Mounting Bracket	None	None
	Angle Bracket	Carbon Steel
	Angle Bracket	304 SS
	Angle Bracket	316 SS
	Marine Approved Bracket	Carbon Steel
	Marine Approved Bracket	304 SS
	Flat Bracket	Carbon Steel
	Flat Bracket	304 SS
	Flat Bracket	316 SS
b. Customer Tag	Customer Tag Type	
	No customer tag	
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters	
	No Conduit Plugs or Adapters Required	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter	
	1/2 NPT 316 SS Certified Conduit Plug	
	M20 316 SS Certified Conduit Plug	
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)	
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)	

0	---	*	*	*	*
1	---	*	*	*	*
2	---	*	*	*	*
3	---	*	*	*	*
8	---	*	*	*	*
4	---	*	*	*	*
5	---	*	*	*	*
6	---	*	*	*	*
7	---	*	*	*	*

_0	---	*	*	*	*
_1	---	*	*	*	*
_2	---	*	*	*	*

__A0	*	*	*	*
__A2	n	n	n	n
__A6	n	n	n	n
__A7	m	m	m	m
__A8	n	n	n	n
__A9	m	m	m	m

TABLE VIII	OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))
Certifications & Warranty	None - No additional options
	Low Temperature Rating (-50 deg C min. ambient operative temperature limit)
	NACE MR0175; MR0103; ISO15156 (FC33338) Process wetted parts only
	NACE MR0175; MR0103; ISO15156 (FC33339) Process wetted and non-wetted parts
	Marine (DNV, ABS, BV, KR, LR)
	EN10204 Type 3.1 Material Traceability (FC33341)
	Certificate of Conformance (F3391)
	Calibration Test Report & Certificate of Conformance (F3399)
	Certificate of Origin (F0195)
	FMEDA (SIL 2/3) Certification (FC33337)
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)
	Cert Clean for O ₂ or CL ₂ service per ASTM G93
	PMI Certification ¹
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
	Extended Warranty Additional 4 years
	Extended Warranty Additional 15 years

00	*	*	*	*
LT	w	w	w	*
FG	*	*	*	*
F7	c	c	c	c
MT	d	d	d	d
FX	*	*	*	*
F3	*	*	*	*
F1	*	*	*	*
F5	*	*	*	*
FE	j	j	j	j
TP	*	*	*	*
OX	e	e	e	e
PM	*	*	*	*
01	*	*	*	*
02	*	*	*	*
03	*	*	*	*
04	*	*	*	*
15	*	*	*	*

TABLE IX	Manufacturing Specials
Factory	Factory Identification

0000	*	*	*	*
------	---	---	---	---

MODEL RESTRICTIONS

Restriction	Available Only with		Not Available with	
Letter	Table	Selection(s)	Table	Selection(s)
a			VIII	F7, FG
k			Ia	J,K,7,L,8
			Ic	H
			Id	B,D,M,N,S
			Ie	1, 2, 3, 5, 6
			III	B- No CRN number available
c	1d	N,K,D,B	If	C
d	IVa	C, D, G, H	Ia	D,H,K,L,8
e	Ib	2	VIIa	1,2,3,5,6,7
f			IVb	F
g			IVb	H, D
h			Ie	4, 5, 6
			VIIa	1,2,3,4,5,6,7,8
j	IVb	H	Vb	1,2,6
m	IVa	B, D, F, H		
n	IVa	A, C, E, G		
p			III	B- No CRN number available
t			Ia	J, K, 7, L, 8
s	Ia	A,E		
u			Va	2
			VIIa	C,D,G,H
v	IVa	C, D, G, H	IVb	D,F
w	Ib	1	VIII	FE
b	Select only one option from this group			

¹The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except Gold plated and STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE REPLACEMENT PARTS

Description	Kit Number
Integrally Mounted Basic Indicator Kit (Compatible with all Electronic Modules)	50049911-501
Integrally Mounted Advanced Indicator Kit (compatible with all Electronic Modules)	50049846-501
Terminal Strip w/o Lightening Protection for HART or DE Modules	50075472-531
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50075472-532
Terminal Strip w/o Lightening Protection FFB/Profibus Module	50075472-533
Terminal Strip w/Lightning Protection Kit for FFB/Profibus Module	50075472-534
HART Electronics Module	50049849-501
HART Electronics Module w/connection for external configuration buttons	50049849-502
DE Electronics Module	50049849-503
DE Electronics Module w/connection for external configuration buttons	50049849-504
FFB Electronics Module Kit	50049849-507
FFB Electronics Module w/connection for external configuration buttons	50049849-508

PRODUCT MANUALS

Description	Part Number
ST 800 Smart Transmitter User Manual - English	34-ST-25-35
ST 800 Smart Transmitter HART/DE Communications Manual - English	34-ST-25-38
ST 800 Smart Transmitter Safety Manual - English	34-ST-25-37
ST 800 Smart Transmitter Foundation Fieldbus Manual - English	34-ST-25-39
ST 800 Smart Transmitter Function Block Manual - English	34-ST-25-42

All product documentation is available at www.honeywellprocess.com.

Sales and Service

For application assistance, current specifications, ordering, pricing, and name of the nearest Authorized Distributor, contact one of the offices below.

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or

(TAC)

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Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

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(Sales) 1-800-343-0228

Email: (Sales)

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or

(TAC)

hfs-tac-support@honeywell.com

Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Pressure
Transmitters, visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

Process Solutions

Honeywell
1250 W Sam Houston Pkwy S
Houston, TX 77042

Honeywell Control Systems Ltd
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Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061

www.honeywellprocess.com



34-ST-03-82
Jan 2021

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***DIFFERENTIAL
PRESSURE
TRANSMITTER***

571292/2024/IPS-SR-PM

Item: Smart Line Differential Pressure Transmitter			
Engineering Units : Flow : Liquid - M3 / Hr, Steam Kg / Hr, Pressure : Kg / cm2 , Temperature : Deg C, Level : mmWC			SHEET 01 OF 9
Model	Decodification	Description	
General	Make	Honeywell	
	Function	Transmission & Indication	
	Model No.	STD810-E1AC4AS-1-C-AHC-11C-B-11A0-F1-0000	
	Qty	As per attached BOM	
	Tag No.	As per attached BOM	
	Calibration Range	As per attached BOM	
	Sensor	Piezoresistive	
	Supply Voltage	10.8 to 42.4 V DC	
	Load Resistance	600 ohms @24V DC	
	Communication	Hart Protocol	
	Display	2 Lines 16 Characters (4.13H x 1.83W mm)	
	Reference Accuracy	0.035% of Span	
	Turndown Ratio	100:1	
	Stability	0.015% of URL per year for 15 Years	
	MAWP	3.45 Bar	
	Maximum Allowed Working Temperature	125 Deg.C (for Temp Higher than 125 Deg C, a suitable length of impulse line to be used, considering 100 Deg.C temperature drop for every One meter length of impulse pipe)	
	Protection Class	IP 67	
	Area Classification	Hazardous Area	
	Connection Location	Side/Side	
STD810	Instrument Range	Min Span 0 to 0.25 mbar to Max Span 0 to 25 mbar	
E	Process Wetted Heads & Diaphragm Materials	Process Head Material : 316 Stainless steel & Diaphragm Material : 316L Stainless Steel	
1	Fill Fluid	Silicone Oil 200	
A	Process Connection	1/4" NPT (F)	
C	Bolt/Nut Materials	Carbon Steel	
4	Vent/Drain Type/Location	Head Type : Dual Ended, Vent Type : Standard Vent, Location : End & Vent material : Matches Head Material ^l	
A	Gasket Materials	Teflon or PTFE (Glass Filled)	
S	Static Pressure	Standard Static Pressure	
1	Head/Connect Orientation	Standard, High Side Left, Low Side Right ² / Std Head Orientation	
C	Approvals	ATEX Explosion proof, Intrinsically Safe & Non-incendive	
A	Electronic Housing Material, Connection Type & Lightning Protection	Material : Polyester Powder Coated Aluminum, Connection : 1/2" NPT & Lightning Protection : None	
H	Output/Protocol	Analogue Output : 4-20mA dc, Digital Protocol : Hart Protocol	
C	Customer Interface Selections	Indicator : Basic, Ext Zero, Span & Config Buttons : Yes, Languages : English	
1	Application Software	Standard Diagnostics	
1	Output Limit, Failsafe & Write Protect Settings	Write Protect : Disabled, Fail Mode : High> 21.0 mAdc, High & Low Output Limits ³ : Honeywell Std (3.8-20.8 mAdc)	
C	General Configuration	Custom Configuration (Unit Data Required from customer)	
B	Accuracy & Calibration	Accuracy : Standard, Calibrated Range : Custom (Unit Data Required), Calibration Qty : Single Calibration	
1	Mounting Bracket	Bracket Type : Angle Bracket, Material : Carbon Steel	
1	Customer Tag	One Wired Stainless Steel Tag (Up to 4 lines 26 Char/line)	
A0	Plugs & Adapters	No Conduit Plugs or Adapters Required	
F1	Certifications	Calibration Test Report & Certificate of Conformance (F3399)	
0000	Manufacturing Specials	Factory Identification	
DATA SHEET FOR DIFFERENTIAL PRESSURE TRANSMITTER		DOC No : DS-DPT-01	Rev : 00

Technical Information

STD800 SmartLine Differential Pressure
Specification 34-ST-03-82, Jan 2021**Introduction**

Part of the SmartLine® family of products, the STD800 is a high performance differential pressure transmitter featuring piezoresistive sensor technology. By combining differential pressure sensing with on chip static pressure and temperature compensation the STD800 offers high accuracy and stability over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications.

Best in Class Features:

- Accuracies up to 0.035% of span standard & 0.025% of span optional
- Stability up to 0.01% of URL per year for 15 years
- Automatic static pressure & temperature compensation
- Rangeability up to 400:1
- Response times as fast as 90ms
- Multiple local display capabilities
- External zero, span, & configuration capability
- Polarity insensitive electrical connections
- Comprehensive on-board diagnostic capabilities
- Integral Dual Seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- World class overpressure protection
- Full compliance to SIL 2/3 requirements.
- Modular design characteristics
- Available with additional 15-year warranty
- Plugged Impulse Line Detection Option
- Dual/Triple Calibration Option (HART & Fieldbus only)



Figure 1 – STD800 Differential Pressure Transmitters feature field-proven piezoresistive sensor technology

Communications/Output Options:

- 4-20mA dc
- Honeywell Digitally Enhanced (DE)
- HART® (version 7.0)
- FOUNDATION™ Fieldbus

All transmitters are available with the above listed communications protocols.

Span & Range Limits:

Model	URL “H ₂ O (mbar)”	LRL “H ₂ O (mbar)”	Min Span “H ₂ O (mbar)”
STD810	10 (25)	-10 (-25)	0.1 (0.25)
STD820	400 (1000)	-400 (-1000)	1.0 (2.5)
Model	psi (bar)	psi (bar)	psi (bar)
STD830	100 (7.0)	-100 (-7.0)	1 (0.07)
STD870	3000 (210)	-100 (-7.0)	30 (2.1)

Description

The SmartLine family of gauge pressure, differential pressure, and absolute pressure transmitters is designed around a high performance piezo-resistive sensor. This one sensor integrates multiple sensors linking process pressure measurement with on-board static pressure (DP Models) and temperature compensation measurements resulting in the best total performance available. This level of performance allows the ST 800 to replace virtually any competitive transmitter available today.

Unique Indication/Display Options

The ST 800 modular design accommodates a basic alphanumeric LCD display or a unique advanced graphics LCD display with many unparalleled features.

Basic Alphanumeric LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm², Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units
- 2 Lines 16 Characters (4.13H x 1.83W mm)
- Square root output indication ($\sqrt{}$)

Advanced Graphics LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Standard and custom measurement units available.
- Up to eight display screens with 3 formats are possible
- (Large PV with Bar Graph or PV with Trend Graph)
- Configurable screen rotation timing (1 to 30 sec)
- Display Square Root capabilities may be set separately from the 4-20mA dc output signal
- Unique "Health Watch" indication provides instant visibility of diagnostics
- Multiple language capability. (EN, DE, FR, IT, ES, RU, TR, CN & JP)

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

Configuration Tools

Integral Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offer the ability to configure the transmitter and display via three externally accessible buttons when either display option is selected. Zero/span capabilities are also optionally available via these buttons with or without selection of a display option.

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any Standards compliant handheld configuration device.

Personal Computer Configuration

Honeywell's SCT 3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface. Field Device Manager (FDM) Software and FDM Express are also available for managing HART & Fieldbus device configurations.

System Integration

- SmartLine communications protocols all meet the most current published standards for HART/DE/Fieldbus.
- Integration with Honeywell's Experion PKS offers the following unique advantages.
 - Transmitter messaging
 - Maintenance mode indication
 - Tamper reporting
 - FDM Plant Area Views with Health summaries
 - All ST 800 units are Experion tested to provide the highest level of compatibility assurance

Modular Design

To help contain maintenance & inventory costs, all ST 800 transmitters are modular in design supporting the user's ability to replace meter bodies, add indicators or change electronic modules without affecting overall performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure and due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics.

Modular Features:

- Meter body replacement
- Exchange/replace electronics/comms modules*
- Add or remove integral indicators*
- Add or remove lightning protection (terminal connection)*

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

With no performance effects, Honeywell's unique modularity results in **lower inventory needs and lower overall operating costs.**

Plugged Impulse Line Detection:

STD800 models are offered with a PILD option which provides indication of a plugged impulse line or process connection. When used in conjunction with a basic or advanced display, a non-critical diagnostic indication appears on the integral display. For units without an integral display, an indication can be seen via the host or hand held device when HART Protocol is utilized.

Dual/Triple Calibration:

STD800 models are optionally offered with multiple calibrations. In lieu of a standard factory calibration, units can be supplied with 1, 2, or 3 customer specified calibrations. These calibrations are stored in the meter body and provide users with factory calibrated performance at up to three different calibrated ranges. This increases application flexibility without requiring any costly recalibration or additional inventory.

Performance Specifications

Reference Accuracy (conformance to +/-3 Sigma)

Table 1

Model	URL	LRL	Min Span	Maximum Turndown Ratio	Stability (% URL/ Yr for 15 years)	Reference Accuracy ^{1,2} (% Span) Std/Opt
STD810	10 in H ₂ O (25mbar)	-10 in H ₂ O (-25mbar)	0.1 in H ₂ O (0.25mbar)	100:1	0.015	0.035
STD820	400 in H ₂ O (1000mbar)	-400 in H ₂ O (-1000mbar)	1 in H ₂ O (2.5mbar)	400:1	0.010	0.0375 / 0.025
STD830	100 psi (7.0 bar)	-100 psi (-7.0 bar)	1 psi (0.07 bar)	100:1	0.020	0.0375 / 0.0325
STD870	3000 psi (210 bar)	-100 psi (-7.0 bar)	30 psi (2.1 bar)	100:1	0.010	0.0375 / 0.0350

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Accuracy at Specified Span, Temperature and Static Pressure Effects: (conformance to +/-3)

Table 2

			Accuracy ^{1,2} (% of Span)				Combined Zero & Span temperature Effect (% Span / 28°C (50 °F))		Combined Zero & Span Static Line Pressure Effect ⁴ (% Span/1000psi) ³	
	Model	URL	Reference Turndown	A	B	C (see URL units)	D	E	F	G
Standard Accuracy	STD810	10 in H ₂ O (25mbar)	10:1	0.010	0.025	1 (2.5)	0.070	0.040	0.050	0.075
	STD820	400 in H ₂ O (1000mbar)	16:1	0.005	0.0325	25 (62.5)	0.025	0.007	0.080	0.007
	STD830	100 psi (7.0 bar)	6.7:1	0.005	0.0325	15 (1.05)	0.025	0.010	0.075	0.075
	STD870	3000 psi (210 bar)	15:1	0.005	0.0325	200 (14)	0.025	0.006	0.075	0.075
High Accuracy Option	STD820	400 in H ₂ O (1000mbar)	16:1	0.005	0.020	25 (62.5)	0.025	0.0107	0.080	0.007
	STD830	100 psi (7 bar)	6.7:1	0.005	0.0275	15 (1.05)	0.025	0.010	0.075	0.075
	STD870	3000 psi (210 bar)	15:1	0.005	0.030	200 (14)	0.025	0.006	0.075	0.075
Turn Down Effect							Temp Effect		Static Effect	
$\pm [A + B] \text{ if Span} \geq C$ $\pm \left[A + B \left(\frac{C}{\text{Span}} \right) \right] \text{ if Span} < C$							$\pm \left[D + E \left(\frac{\text{URL}}{\text{Span}} \right) \right]$		$\pm \left[F + G \left(\frac{\text{URL}}{\text{Span}} \right) \right]$	

Total Performance = +/- $\sqrt{(\text{Accuracy})^2 + (\text{Temp Effect})^2 + (\text{Static Line Pressure Effect})^2}$

Total Performance Examples: (standard accuracy 5:1 Turndown, up to 50 °F shift & up to 1000 psi Static Pressure³)

Model	Total Performance	Model	Total Performance
STD810 @ 2"H ₂ O	0.505% of span	STD830 @ 20 psi	0.140% of span
STD820 @ 80" H ₂ O	0.135% of span	STD870 @ 600 psi	0.131% of span

Typical Calibration Frequency: Calibration verification is recommended every four (4) years

Notes:

1. Terminal based Accuracy – Includes combined effects of linearity, hysteresis and repeatability. Analog output adds 0.005% of span
2. For zero based spans and reference conditions of 25 °C (77 °F). 0 psig static pressure. 10 to55% RH, and 316 Stainless Steel barrier diaphragm.
3. STD810 includes only zero shift with static pressure. Results ar % of span/25 psig.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature ¹ STD800	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Meter Body Temperature ² STD810, 820, 830, 870	25±1	77±2	-40 to 110 ¹	-40 to 230 ¹	-40 to 125	-40 to 257	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vac. Region – Min. Pressure All Models Except STD810 mmHg absolute inH ₂ O absolute	Atmospheric Atmospheric		25 13		2 (short term) ³ 1 (short term) ³			
Supply Voltage Load Resistance	10.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,440 ohms (as shown in Figure 2)							
Maximum Allowable Working Pressure (MAWP) ^{4,5} (ST 800 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)	Standard: STD810 = 50 psi (3.45 bar) STD820, STD830 and STD870 = 4,500 psi (310 bar) Optional: STD820, STD830, STD870 = 6,000 psi (420 bar) Static Pressure Limit = Maximum Allowable Working Pressure (MAWP) = Overpressure Limit for ST 800 Differential Pressure Transmitters							

¹ LCD Display operating temperature -20°C to +70°C . Storage temperature -30°C to 80°C.

² Silicone 704 minimum temperature rating is 0°C (32°F). CTFE minimum temperature rating is -30°C (-22°F).
NEOBEE M-20 minimum temperature rating is -15°C (5°F). NEOBEE® is a registered trademark of Stepan Company.

³ Short term equals 2 hours at 70°C (158°F).

⁴ MAWP applies for temperatures -40 to 125°C. Static Pressure Limit is de-rated to 3,000 psi for -26°C to -40°C. for all models except STD810. Use of graphite. o-rings de-rates transmitter to 3,625 psi. Use of 1/2:" process adaptors with graphite o-rings de-rates transmitter to 3,000 psi.

⁵ Consult factory for MAWP of ST 800 transmitters with CRN approval.

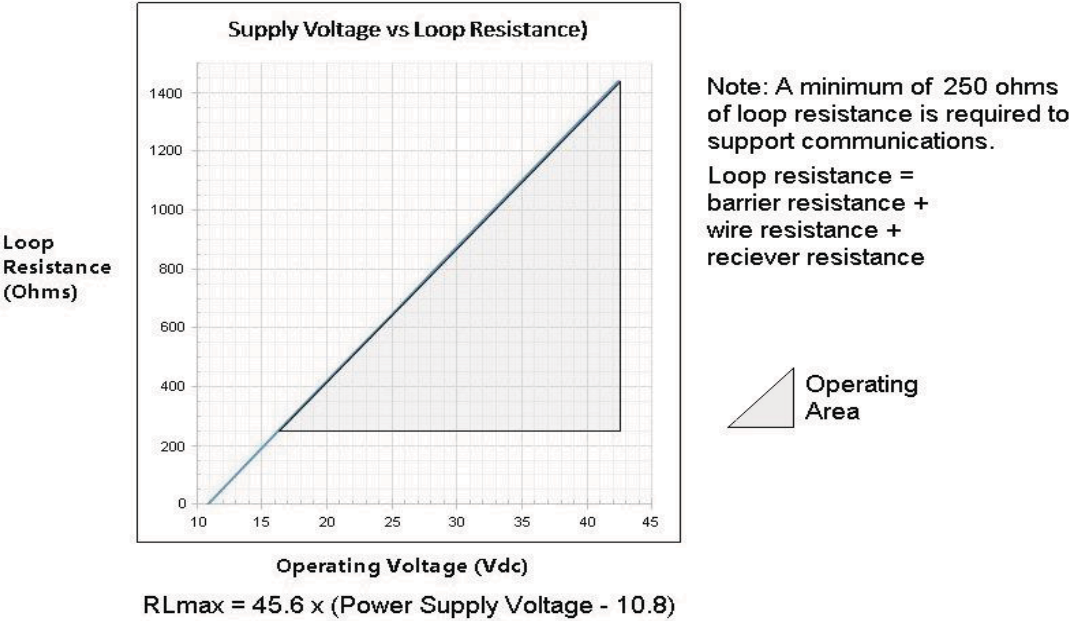


Figure 2 - Supply voltage and loop resistance chart & calculations

Performance Under Rated Conditions – All Models

Parameter	Description		
Analog Output	Two-wire, 4 to 20 mA (HART & DE Transmitters only)		
Digital Communications:	Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITK 6.0.1 compliant All transmitters, irrespective of protocol have polarity insensitive connection.		
HART & DE Output Failure Modes (NAMUR for DE Units requires selecting display and configuration buttons or factory configuration)	Honeywell Standard:		NAMUR NE 43
	Compliance:		
	Normal Limits:	3.8 – 20.8 mA	3.8 – 20.5 mA
Supply Voltage Effect	Failure Mode:	≤ 3.6 mA and ≥ 21.0 mA	≤ 3.6 mA and ≥ 21.0 mA
Transmitter Turn on Time (includes power up & test algorithms)	HART or DE: 2.5 sec. Foundation Fieldbus: Host dependant		
Response Time (delay + time constant)	DE/HART Analog Output		FOUNDATION Fieldbus
	90mS		150mS (Host Dependant)
Damping Time Constant	HART: Adjustable from 0 to 32 seconds in 0.1 increments. Default: 0.50 seconds DE: Discrete values 0, .16, .32, .48, 1, 2, 4, 8, 16, 32 seconds. Default: 0.48 seconds		
Vibration Effect ST 820, ST 830, ST 870	Less than +/- 0.1% of URL w/o damping Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)		
Electromagnetic Compatibility	IEC 61326-3-1		
Lightning Protection Option	Leakage Current: 10uA max @ 42.4VDC 93C		
	Impulse rating:	8/20uS 5000A (>10 strikes) 10000A (1 strike min.) 10/1000uS 200A (> 300 strikes)	

Materials Specifications (see model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	316L SS, Hastelloy® C-276 ² , Monel® 400 ³ , Tantalum, Gold-plated 316L SS, Gold-plated Hastelloy® C-276, Gold-plated Monel® 400
Process Head Material	316 SS ⁴ , Carbon Steel (Zinc-plated) ⁵ 316 SS ⁴ , Carbon Steel (Zinc-plated) ⁵ , Hastelloy C-276 ⁶ , Monel 400 ⁷
Vent/Drain Valves & Plugs ¹	316 SS ⁴ , Hastelloy C-276 ² , Monel 400 ⁷
Head Gaskets	Glass-filled PTFE standard. Viton® and graphite are optional.
Meter Body Bolting	Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts, Monel K500, Super Duplex and B7M.
Optional Adapter Flange and Bolts	Adapter Flange materials include 316 SS, Hastelloy C-276 and Monel 400. Bolt material for flanges is dependent on process head bolts material chosen. Standard adaptor seal material is glass-filled PTFE. Viton and graphite are optional.
Mounting Bracket	Carbon Steel (Zinc-plated) or 304 Stainless Steel or 316 Stainless Steel
Fill Fluid	Silicone Oil 200, Silicone Oil 704, Inert Fluorinated Oil CTFE and NEOBEE® M-20 (Note that STD810 is only available with Silicone Oil 200 and NEOBEE® M-20)
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets NEMA 4X, IP66, & P67. All stainless steel housing is optional.
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 3.
Process Connections	1/4- NPT or 1/2- NPT with adapter (meets DIN requirements)
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See Figure 4.
Net Weight	8.3 pounds (3.8 Kg) with Aluminum Housing

¹ Vent/Drains are sealed with Teflon®² Hastelloy C-276 or UNS N10276³ Monel 400 or UNS N04400⁴ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.⁵ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.⁶ Hastelloy C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy C-276⁷ Monel 400 or UNS N04400. Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)

Foundation Fieldbus (FF)

Power Supply Requirements

Voltage: 9.0 to 32.0Vdc at terminals

Steady State Current: 17.6mA_{dc}

Software Download Current: 27.4mA_{dc}

Available Function Blocks

Block Type	Qty	Execution Time
Resource	1	n/a
Transducer	1	n/a
Diagnostic	1	n/a
Analog Input	1*	30 ms
PID w/Autotune	1	45 ms
Integrator	1	30 ms
Signal Char (SC)	1	30 ms
LCD Display	1	n/a
Flow Block	1	30 ms
Input Selector	1	30 ms
Arithmetic	1	30 ms

* AI block may have two (2) additional instantiations.

All available function blocks adhere to FOUNDATION Fieldbus standards. PID blocks support ideal & robust PID algorithms with full implementation of Auto-tuning.

Link Active Scheduler

Transmitters can perform as a backup Link Active Scheduler and take over when the host is disconnected. Acting as a LAS, the device ensures scheduled data transfers typically used for the regular, cyclic transfer of control loop data between devices on the Fieldbus.

Number of Devices/Segment

Entity IS model: 6 devices/segment

Schedule Entries

18 maximum schedule entries

Number of VCR's: 24 max

Compliance Testing: Tested according to ITK 6.0.1

Software Download

Utilizes Class-3 of the Common Software Download procedure as per FF-883 which allows the field devices of any manufacturer to receive software upgrades from any host.

Honeywell Digitally Enhanced (DE)

DE is a Honeywell proprietary protocol which provides digital communications between Honeywell DE enabled field devices and Hosts.

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Standard Diagnostics

ST 800 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown below.

Critical Diagnostics		
HART DD/DTM tools	Advanced Display	Basic Display
Electronic Module DAC Failure	Electronics Module fault	Electronics Module fault
Meter Body NVM Corrupt	Meterbody fault	Meterbody fault
Config Data Corrupt	Electronics Module fault	Electronics Module fault
Electronic Module Diag Failure	Electronics Module fault	Electronics Module fault
Meter Body Critical Failure	Meterbody fault	Meterbody fault
Sensor Comm Timeout	Meterbody Comm fault	Meterbody Comm fault

Non-Critical Diagnostics		
HART DD/DTM tools	Advanced Display	Basic Display
Display Failure	n/a	n/a
Electronic Module Comm Failure	n/a	n/a
Meter Body Excess Correct	Zero Correct (OK or EXCESSIVE) Span Correct (OK or EXCESSIVE)	n/a
Sensor Over Temperature	Meterbody Temp (OK, OVER TEMP)	n/a
Fixed Current Mode	Analog Out mode (Fixed or Normal)	n/a
PV Out of Range	Primary PV (OK or OVERLOAD)	n/a
No Factory Calibration	Factory Cal (OK, NO FACTORY CAL)	n/a
No DAC Compensation	DAC Temp Comp (OK, NO COMPENSATION)	n/a
LRV Set Error – Zero Config Button	n/a	n/a
URV Set Error – Span Config Button	n/a	n/a
AO Out of Range	n/a	n/a
Loop Current Noise	n/a	n/a
Meter Body Unreliable Comm	Meterbody Comm (OK, SUSPECT)	n/a
Tamper Alarm	n/a	n/a
No DAC Calibration	n/a	n/a
Sensor Supply Voltage Low	Supply Voltage (OK, LOW, or HIGH)	n/a

Refer to ST 800 diagnostics tech note for additional level diagnostics.

Other Certification Options

Materials

- NACE MRO175, MRO103, ISO15156

Hazardous Areal Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
A	FM Approvals™ USA	Explosionproof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; T6..T5 Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Class II, Zone 21, AEx tb IIIC T95° Db	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G: T4 Class I, Zone 0, AEx ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
			Foundation Fieldbus	Note 2b	-50 °C to 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D locations, T4 Class I, Zone 2, AEx nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-
		STANDARDS: FM Class 3600:2011; FM Class 3610: 2010; FM Class 3611: 2004; FM Class 3615: 2006; FM Class 3616: 2011; FM Class 3810: 2005; ANSI/ISA 60079-0: 2013; ANSI/UL 60079-1: 2015; ANSI/UL 60079-11: 2014; ANSI/ISA 60079-15: 2012; ANSI/UL 60079-26: 2017; ANSI/UL 60079-31: 2015; ANSI/NEMA 250: 2003; ANSI/ IEC 60529: 2004			
B	Canadian Standards Association (CSA) USA and Canada	Explosion Proof: Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T6..T5 Class I Zone 1 AEx db IIC T6..T5 Ga/Gb Ex db IIC T6..T5 Ga/Gb Zone 22 AEx tb IIIC T95° Db Ex tb IIIC T95° Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T4 Class I Zone 0, AEx ia IIC T4 Ga Class I Zone 2, AEx ic IIC T4 Gc Ex ia IIC T4 Ga Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F, G; Class III, Division 2, T4 Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
		STANDARDS: CSA C22.2 No. 0-10; CSA C22.2 No. 94-M91; CSA C22.2 No. 25-1966; CSA C22.2 No. 30-M1986; CSA C22.2 No. 142-M1987; CSA C22.2 No. 157-92; CSA C22.2 No. 213-M1987; CSA-C22.2 No. 60529:05; CSA-C22.2 No. 60079-0:11; CSA-C22.2 No. 60079-1:11; CSA-C22.2 No. 60079-11:11; CSA-C22.2 No. 60079-15:12; CSA-C22.2 No. 60079-31:12; ISA 12.12.01-2010; ISA 60079-0: 2009; ISA 60079-11: 2011; ISA 60079-15: 2009; ISA 60079-26: 2008; ISA-60079-27:2007 (12.02.04)-2006 (R2011); UL 913 Ed. 6; UL 916:1998; ANSI/ISA-12.27.01-2011			
C	ATEX	Flameproof: SIRA 12ATEX2233X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: SIRA 12ATEX2233X II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: SIRA 12ATEX4234X II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: SIRA 12ATEX4234X II 3 G Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) II 3 G Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: EN 60079-0: 2012/A11: 2013; EN 60079-1: 2014; EN 60079-7: 2015; EN 60079-11: 2012; EN 60079-26: 2015; EN 60079-31: 2009			
D	IECEx World	Flameproof: IECEx SIR 12.0100X Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: IECEx SIR 12.0100X Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: IECEx SIR 12.0100X Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: IECEx SIR 12.0100X Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: IEC 60079-0: 2011; IEC 60079-1: 2014; IEC 60079-7: 2017; IEC 60079-11: 2011; IEC 60079-26: 2014; IEC 60079-31: 2013			

E	SAEx South Africa	Flameproof : Ex d IIC T6...T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
F	INMETRO Brazil	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50°C TO 70°C
			Foundation Fieldbus	Note 2b	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-
G	NEPSI CHINA	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-

H	KOSHA Korea	Flameproof : Ex d IIC T4, T5, T6 Ex tD A21 IP66/IP67 T95°C...T120 °C	All	Note 1	T4: -50°C TO 85°C T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4	4-20 mA / DE/ HART	Note 2	Ta= -50 °C to 70°C
			Foundation Fieldbus	Note 2	Ta= -50 °C to 70°C
		Enclosure: IP66/ IP67	All	All	-
I	EAC Russia, Belarus and Kazakhstan	Flameproof: Ga/Gb Ex d IIC T6..T5 Ex tb IIIC Db T 85°C	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ga Ex ia IIC T4 X FISCO Field Device (Only for FF Option) Ga Ex ia IIC T4 X	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Non Sparking: 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ga Ex ic IIC T4 X FISCO Field Device (Only for FF Option) 2 Ex ic IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	
J	CCoE INDIA	Flameproof: Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Non Sparking Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
K	UATR UKRAINE	Flameproof: II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:

Voltage= 11 to 42 V DC
= 10 to 30 V (FF)

Current= 4-20 mA Normal
= 30 mA (FF)

2. Intrinsically Safe Entity Parameters

a. Analog/ DE/ HART Entity Values:

Vmax= Ui = 30V Imax= Ii= 105mA Ci = 4.2nF Li =984 uH Pi =0.9W

Transmitter with Terminal Block Revision E or Later

Vmax= Ui = 30V Imax= Ii= 225mA Ci = 4.2nF Li = 0 Pi =0.9W

Note : Transmitter with Terminal Block Revision E or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-001 or 50049839-002
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

b. Foundation Fieldbus- Entity Values

Vmax= Ui = 30V Imax= Ii= 180mA Ci = 0nF Li = 984 uH Pi =1W

Transmitter with Terminal Block Revision F or Later)

Vmax= Ui = 30V Imax= Ii= 225mA Ci =0nF Li = 0 Pi =1 W

FISCO Field Device

Vmax= Ui = 17.5V Imax= Ii= 380 mA Ci = 0nF Li = 0 Pi =5.32 W

Note : Transmitter with Terminal Block Revision F or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-003 or 50049839-004
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

Approval Certifications:

Marine Certificates	This certificate defines the certifications covered for the ST 800 Pressure Transmitter family of products, including the SMV 800 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications.	
	For ST 800 Smart Pressure Transmitter and SMV800 Smart Multivariable Transmitter	
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA	
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV	
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476	
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001	
SIL 2/3 Certification	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)	
	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.	
MEASUREMENT INSTRUMENTS DIRECTIVE (MID) 2004/ 22/ EC	Certificate Issued by NMI Certin B.V.	
	Mechanical Class: M3 Electromagnetic Environment: E3	
	Ambient Temperature Range: -25 °C to + 55 °C	
	Unit	Custom Calibration
	STD820	0 to 1000 mBar
	STD830	0 to 7 Bar
	STA84L	0 to 35 Bar A
	STG84L	0 to 35 Bar
	STD870	0 to 100 Bar
	STA87L	0 to 100 Bar A
	STG87L	0 to 100 Bar

Mounting & Dimensional Drawings

Mounting Configurations

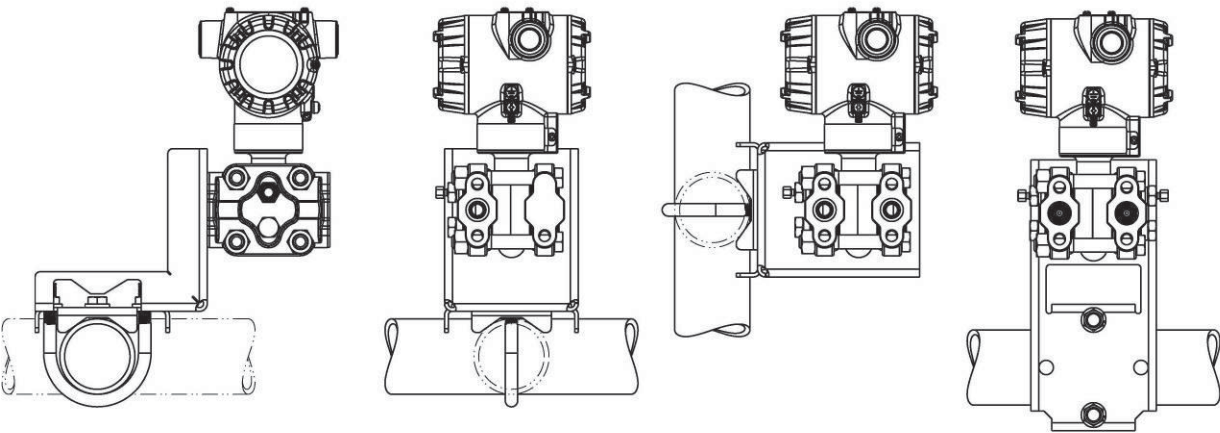


Figure 3 – Typical mounting configurations for STD810, STD820, STD830 and STD870 for reference

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

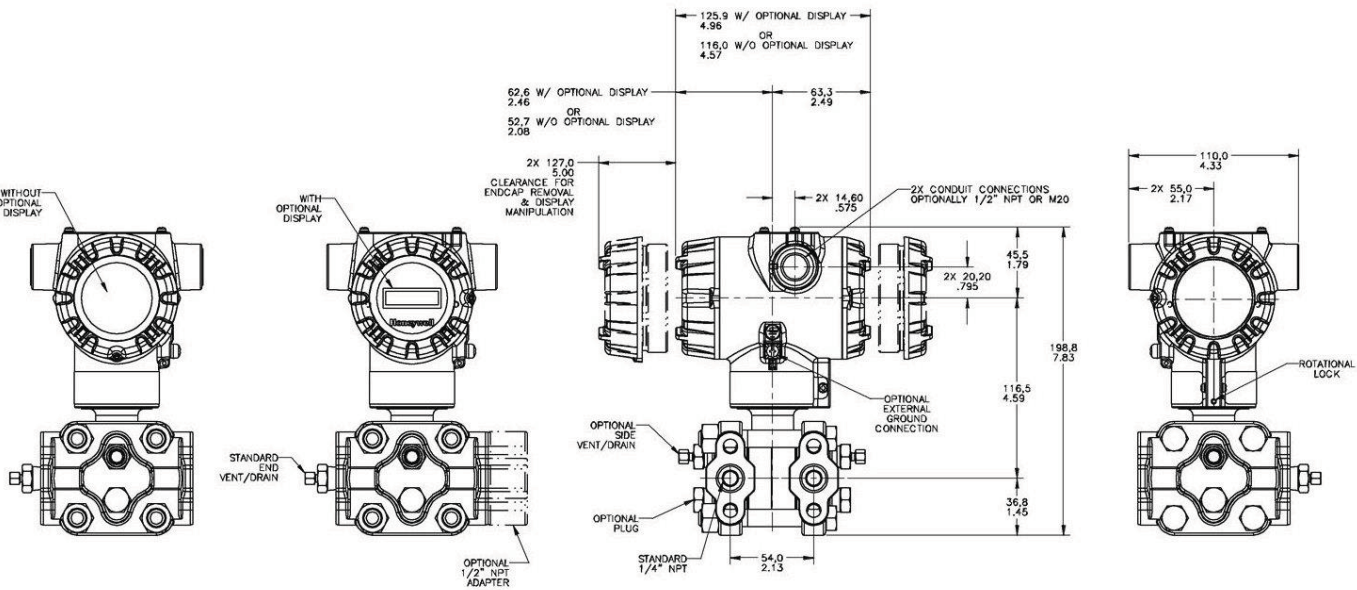


Figure 4 – Typical mounting dimensions of STD810, STD820, STD830 & STD870 for reference

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

Model STD800

Differential Pressure Transmitter

Model Selection Guide:
34-ST-16-82 Issue 25

Instructions: Make selections from all Tables Key through XIII using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key	I	II	III	IV	V	VI	VII	VIII (Optional)	IX
STD _____	_____	_____	_____	_____	_____	_____	_____	_____.____.	0000

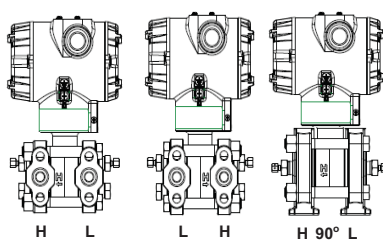
KEY NUMBER	URL	LRL	Max Span	Min Span	Units
Measurement Range	10 (25.0)	-10 (-25.0)	10 (25)	0.1 (0.25)	" H ₂ O (mbar)
	400/(1000)	-400/(-1000)	400/(1000)	1.0 (2.5)	" H ₂ O (mbar)
	100 (7.0)	-100 (-7.0)	100 (7.0)	1 (0.07)	psi (bar)
	3000 (210)	-100 (-7.0)	3000 (210)	30 (2.1)	psi (bar)

Selection	Availability			
STD810	↓			
STD820		↓		
STD830			↓	
STD870				↓

TABLE 1		METER BODY SELECTIONS		
a. Process Wetted Heads & Diaphragm Materials	Process Head Material		Diaphragm Material	
	Plated Carbon Steel		316L Stainless Steel Hastelloy® C-276 Monel® 400 Tantalum Gold Plated Stainless Steel Gold Plated Hastelloy C-276 Gold Plated Monel 400	
	316 Stainless Steel		316L Stainless Steel Hastelloy C-276 Monel 400 Tantalum Gold Plated Stainless Steel Gold Plated Hastelloy C-276 Gold Plated Monel 400	
	Hastelloy C-276		Hastelloy C-276 Tantalum Gold Plated Hastelloy C-276	
	Monel 400		Monel 400 Gold Plated Monel 400	
b. Fill Fluid	Silicone Oil 200 Fluorinated Oil CTFE Silicone Oil 704 NEOBEE™ M-20			
c. Process Connection	None 1/2" NPT female	None (1/4" NPTF female thread Std) Materials to Match Head & Head Bolt Materials Selections ¹		
d. Bolt/Nut Materials	Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Monel K500 Super Duplex B7M			
e. Vent/Drain Type/Location	Head Type	Vent Type	Location	Vent Material
	Single Ended	None	None	None
	Single Ended	Standard Vent	Side	Matches Head Material ¹
	Single Ended	Center Vent	Side	Stainless Steel Only
	Dual Ended	Standard Vent	End	Matches Head Material ¹
	Dual Ended	Center Vent	End	Stainless Steel Only
	Dual Ended	Std Vent/Plug	Side/End	Matches Head Material ¹
f. Gasket Material	Teflon® or PTFE (Glass Filled) Viton® or Fluorocarbon Elastomer Graphite			
g. Static Pressure	Standard Static Pressure - 4500 psig (310 bar) except STD810: 50 psi (3.5 bar) High Pressure 6000 psi (415 bar)			

A		*	*	*	*
B			*	*	*
C				*	*
D				a	a
1		*		*	a
2			*	*	*
3			*	*	*
E		*	*	*	*
F			*	*	*
G			*	*	*
H			a	a	a
4		*	*	*	*
5			*	*	*
6			*	*	*
J			*	*	*
K			a	a	a
7			*	*	*
L			a	a	a
8			a	a	a
1		*	*	*	*
2			*	*	*
3			*	*	*
4		*	*	*	*
A		*	*	*	*
H		*	*	*	*
C		*	*	*	*
S		*	*	*	*
N		*	*	*	*
K		p	p	p	p
M		p	p	p	p
D		p	p	p	p
B		*	*	*	*
1		*	*	*	*
2		*	*	*	*
3		t	t	t	t
4		*	*	*	*
5		t	t	t	t
6		*	*	*	*
A		*	*	*	*
B		*	*	*	*
C		*	*	*	*
S		*	*	*	*
H		k	k	k	k

¹Except Carbon Steel Heads shall use 316SS Vent/Drain, Plugs & Adapters when required



STD870
STD830
STD820
STD810

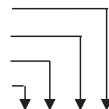


TABLE II	Meter Body & Connection Orientation	
Head/Connect Orientation	Standard	High Side Left, Low Side Right ² / Std Head Orientation
	Reversed	Low Side Left, High Side Right ² / Std Head Orientation
	90/Standard	High Side Left, Low Side Right ² / 90° Head Rotation

1	*	*	*	*
2	*	*	*	*
3	h	h	h	h

TABLE III	Agency Approvals (see data sheet for Approval Code Details)
Approvals	No Approvals Required
	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	ATEX Explosion proof, Intrinsically Safe & Non-incendive
	IECEx Explosion proof, Intrinsically Safe & Non-incendive
	SAEx Explosion proof, Intrinsically Safe & Non-incendive
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive
	EAC Customs Union(Russia,Belarus,Kazakhstan)Ex Approval, Flame proof, Intrinsically Safe
	CCoE Explosion proof, Intrinsically Safe & Non-incendive
	UATR Flameproof, Intrinsically Safe & Dustproof

0	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H	*	*	*	*
I	*	*	*	*
J	*	*	*	*
K	*	*	*	*

TABLE IV	TRANSMITTER ELECTRONICS SELECTIONS		
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection
	Polyester Powder Coated Aluminum	1/2 NPT	None
	Polyester Powder Coated Aluminum	M20	None
	Polyester Powder Coated Aluminum	1/2 NPT	Yes
	Polyester Powder Coated Aluminum	M20	Yes
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None
	316 Stainless Steel (Grade CF8M)	M20	None
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes
b. Output/ Protocol	Analog Output		Digital Protocol
	4-20mA dc		HART Protocol
	4-20mA dc		DE Protocol
	none		Foundation Fieldbus
c. Customer Interface Selections	Indicator	Ext Zero, Span & Config Buttons	Languages
	None	None	None
	None	Yes (Zero/Span Only)	None
	Basic	None	English
	Basic	Yes	English
	Advanced	None	EN, GE, FR, IT, SP, RU, TU
	Advanced	Yes	EN, GR, FR, IT, SP, RU, TU
	Advanced	None	EN, CH, JP
	Advanced	Yes	EN, CH, JP

A__	*	*	*	*
B__	*	*	*	*
C__	*	*	*	*
D__	*	*	*	*
E__	*	*	*	*
F__	*	*	*	*
G__	*	*	*	*
H__	*	*	*	*

H	*	*	*	*
D	u	u	u	u
F	*	*	*	*

--0	*	*	*	*
--A	f	f	f	f
--B	*	*	*	*
--C	*	*	*	*
--D	*	*	*	*
--E	*	*	*	*
--H	*	*	*	*
--J	*	*	*	*

TABLE V	CONFIGURATION SELECTIONS		
a. Application Software	Diagnostics		
	Standard Diagnostics		
	Advanced Diagnostics (Above with Plugged Impulse Detection PILD)		
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³
	Disabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Disabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	N/A	N/A Fieldbus or Profibus
	Disabled	N/A	N/A Fieldbus or Profibus
c. General Configuration	Factory Standard		
	Custom Configuration (Unit Data Required from customer)		

1__	*	*	*	*
2__	*	*	*	*

1	f	f	f	f
2	f	f	f	f
3	f	f	f	f
4	f	f	f	f
5	g	g	g	g
6	g	g	g	g
--S	*	*	*	*
--C	*	*	*	*

² Left side/Right side as viewed from the customer connection perspective

³ NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

TABLE VI	CALIBRATION & ACCURACY SELECTIONS		
a. Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty
	Standard	Factory Std	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration
	Standard	Custom (Unit Data Required)	Dual Calibration
	Standard	Custom (Unit Data Required)	Triple Calibration
	High Accuracy	Factory Std	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Dual Calibration
	High Accuracy	Custom (Unit Data Required)	Triple Calibration

STD870
STD830
STD820
STD810

A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E		s	s	s
F		s	s	s
G		s	s	s
H		s	s	s

TABLE VII	ACCESSORY SELECTIONS	
a. Mounting Bracket	Bracket Type	Material
	None	None
	Angle Bracket	Carbon Steel
	Angle Bracket	304 SS
	Angle Bracket	316 SS
	Marine Approved Bracket	Carbon Steel
	Marine Approved Bracket	304 SS
	Flat Bracket	Carbon Steel
	Flat Bracket	304 SS
	Flat Bracket	316 SS
b. Customer Tag	Customer Tag Type	
	No customer tag	
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)	
	Two Wired Stainless Steel Tag (Up to 4 lines 26 char/line)	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters	
	No Conduit Plugs or Adapters Required	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter	
	1/2 NPT 316 SS Certified Conduit Plug	
	M20 316 SS Certified Conduit Plug	
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)	
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)	

0	---	*	*	*	*
1	---	*	*	*	*
2	---	*	*	*	*
3	---	*	*	*	*
8	---	*	*	*	*
4	---	*	*	*	*
5	---	*	*	*	*
6	---	*	*	*	*
7	---	*	*	*	*

_0	---	*	*	*	*
_1	---	*	*	*	*
_2	---	*	*	*	*

__A0	*	*	*	*
__A2	n	n	n	n
__A6	n	n	n	n
__A7	m	m	m	m
__A8	n	n	n	n
__A9	m	m	m	m

TABLE VIII	OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))
Certifications & Warranty	None - No additional options
	Low Temperature Rating (-50 deg C min. ambient operative temperature limit)
	NACE MR0175; MR0103; ISO15156 (FC33338) Process wetted parts only
	NACE MR0175; MR0103; ISO15156 (FC33339) Process wetted and non-wetted parts
	Marine (DNV, ABS, BV, KR, LR)
	EN10204 Type 3.1 Material Traceability (FC33341)
	Certificate of Conformance (F3391)
	Calibration Test Report & Certificate of Conformance (F3399)
	Certificate of Origin (F0195)
	FMEDA (SIL 2/3) Certification (FC33337)
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)
	Cert Clean for O ₂ or CL ₂ service per ASTM G93
	PMI Certification ¹
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
	Extended Warranty Additional 4 years
	Extended Warranty Additional 15 years

00	*	*	*	*
LT	w	w	w	*
FG	*	*	*	*
F7	c	c	c	c
MT	d	d	d	d
FX	*	*	*	*
F3	*	*	*	*
F1	*	*	*	*
F5	*	*	*	*
FE	j	j	j	j
TP	*	*	*	*
OX	e	e	e	e
PM	*	*	*	*
01	*	*	*	*
02	*	*	*	*
03	*	*	*	*
04	*	*	*	*
15	*	*	*	*

TABLE IX	Manufacturing Specials
Factory	Factory Identification

0000	*	*	*	*
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MODEL RESTRICTIONS

Restriction	Available Only with		Not Available with	
Letter	Table	Selection(s)	Table	Selection(s)
a			VIII	F7, FG
k			Ia	J,K,7,L,8
			Ic	H
			Id	B,D,M,N,S
			Ie	1, 2, 3, 5, 6
			III	B- No CRN number available
			If	C
c	1d	N,K,D,B	Ia	D,H,K,L,8
d	IVa	C, D, G, H	VIIa	1,2,3,5,6,7
e	Ib	2		
f			IVb	F
g			IVb	H, D
h			Ie	4, 5, 6
			VIIa	1,2,3,4,5,6,7,8
j	IVb	H	Vb	1,2,6
m	IVa	B, D, F, H		
n	IVa	A, C, E, G		
p			III	B- No CRN number available
t			Ia	J, K, 7, L, 8
s	Ia	A,E		
u			Va	2
			VIIa	C,D,G,H
v	IVa	C, D, G, H	IVb	D,F
w	Ib	1	VIII	FE
b	Select only one option from this group			

¹The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except Gold plated and STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE REPLACEMENT PARTS

Description	Kit Number
Integrally Mounted Basic Indicator Kit (Compatible with all Electronic Modules)	50049911-501
Integrally Mounted Advanced Indicator Kit (compatible with all Electronic Modules)	50049846-501
Terminal Strip w/o Lightning Protection for HART or DE Modules	50075472-531
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50075472-532
Terminal Strip w/o Lightning Protection FFB/Profibus Module	50075472-533
Terminal Strip w/Lightning Protection Kit for FFB/Profibus Module	50075472-534
HART Electronics Module	50049849-501
HART Electronics Module w/connection for external configuration buttons	50049849-502
DE Electronics Module	50049849-503
DE Electronics Module w/connection for external configuration buttons	50049849-504
FFB Electronics Module Kit	50049849-507
FFB Electronics Module w/connection for external configuration buttons	50049849-508

PRODUCT MANUALS

Description	Part Number
ST 800 Smart Transmitter User Manual - English	34-ST-25-35
ST 800 Smart Transmitter HART/DE Communications Manual - English	34-ST-25-38
ST 800 Smart Transmitter Safety Manual - English	34-ST-25-37
ST 800 Smart Transmitter Foundation Fieldbus Manual - English	34-ST-25-39
ST 800 Smart Transmitter Function Block Manual - English	34-ST-25-42

All product documentation is available at www.honeywellprocess.com.

Sales and Service

For application assistance, current specifications, ordering, pricing, and name of the nearest Authorized Distributor, contact one of the offices below.

ASIA PACIFIC

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Phone: + 800 12026455 or
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FAX: +(61) 7-3840 6481
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Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

AMERICAS

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(Sales) 1-800-343-0228

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or

(TAC)

hfs-tac-support@honeywell.com

Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Pressure
Transmitters, visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

Process Solutions

Honeywell
1250 W Sam Houston Pkwy S
Houston, TX 77042

Honeywell Control Systems Ltd
Honeywell House, Skimped Hill Lane
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061

www.honeywellprocess.com



34-ST-03-82
Jan 2021

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PRESSURE TRANSMITTER

571292/2024/IPS-SR-PM

Item: Smart Line Pressure Transmitter			
Engineering Units : Flow : Liquid - M3 / Hr, Steam Kg / Hr, Pressure : Kg / cm2 , Temperature : Deg C, Level : mmWC			SHEET 05 OF 9
Model	Decodification	Description	
General	Make	Honeywell	
	Function	Transmission & Indication	
	Model No.	YSTG74L-E1G000-1-C-AHD-11C-B-51A0-F1(PT)-0000; Y : Epoxy Polyester Powder Coated Hybrid Paint + 5Pin Plug & Socket connector	
	Qty	As per attached BOM	
	Tag No.	As per attached BOM	
	Calibration Range	As per attached BOM	
	Sensor	Piezoresistive	
	Supply Voltage	10.8 to 42.4 V DC	
	Load Resistance	600 ohms @24V DC	
	Communication	Hart Protocol	
	Display	2 Lines 6 digits PV (9.95H x 4.20W mm) 8 Characters	
	Reference Accuracy	0.055% of Span	
	Turndown Ratio	100:1	
	Stability	0.015% of URL per year for 10 Years	
	MAWP	35 Bar	
	Maximum Allowed Working Temperature	125 Deg.C (for Temp Higher than 125 Deg C, a suitable length of impulse line to be used, considering 100 Deg.C temperature drop for every One meter length of impulse pipe)	
	Protection Class	IP 67	
	Area Classification	Hazardous Area	
	Connection Location	Bottom	
STG74L	Instrument Range	Min Span 0 to 0.35 bar to Max Span 0 to 35 bar	
E	Process Wetted Heads & Diaphragm Materials	Process Head Material : 316 Stainless steel & Diaphragm Material : 316L SS	
1	Fill Fluid	Silicone Oil 200	
G	Process Connection	1/2" NPT (F)	
0	Bolt/Nut Materials	None	
0	Vent/Drain Type/Location	None	
0	Gasket Materials	None	
1	Head/Connect Orientation	Standard, High Side Left, Low Side Right ² / Std Head Orientation	
C	Approvals	ATEX Explosion proof, Intrinsically Safe & Non-incendive	
A	Electronic Housing Material, Connection Type & Lightning Protection	Material : Y : Epoxy Polyester Powder Coated Hybrid Paint, Connection : 1/2" NPT & Lightning Protection : None	
H	Output/Protocol	Analogue Output : 4-20mA dc, Digital Protocol : Hart Protocol	
D	Customer Interface Selections	Indicator : Standard(w/Internal Zero,Span & Config Buttons), Ext Zero, Span & Config Buttons :None, Languages : English	
1	Application Software	Standard Diagnostics	
1	Output Limit, Failsafe & Write Protect Settings	Write Protect : Disabled, Fail Mode : High> 21.0 mAdc, High & Low Output Limits ³ : Honeywell Std (3.8-20.8 mAdc)	
C	General Configuration	Custom Configuration (Unit Data Required from customer)	
B	Accuracy & Calibration	Accuracy : Standard, Calibrated Range : Custom (Unit Data Required), Calibration Qty : Single Calibration	
5	Mounting Bracket	Bracket Type : Flat Bracket, Material : Carbon Steel	
1	Customer Tag	One Wired Stainless Steel Tag (Up to 4 lines 26 Char/line)	
A0	Plugs & Adapters	No Conduit Plugs or Adapters Required	
F1	Certifications	Calibration Test Report & Certificate of Conformance	
0000	Manufacturing Specials	Factory Identification	
P&S	Accessories	5Pin Plug & Socket connector	
DATA SHEET FOR PRESSURE TRANSMITTER		DOC No : DS-PT-05	Rev : 00

Technical Information

STG700 SmartLine Gauge Pressure
Specification 34-ST-03-102, Jan 2021

Introduction

Part of the SmartLine® family of products, the STG700 and STG70L are suitable for monitoring, control and data acquisition featuring piezoresistive sensor technology combining pressure sensing with on chip temperature compensation capabilities providing high accuracy, stability and performance over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications.

Best in Class Features:

- Accuracies up to 0.055% of span standard & 0.04% of span optional
- Stability up to 0.02% of URL per year for 10 years
- Automatic temperature compensation
- Rangeability up to 100:1
- Response times as fast as 100ms
- Alphanumeric display capabilities
- External zero, span, & configuration capability
- Polarity insensitive electrical connections
- Comprehensive on-board diagnostic capabilities
- Integral Dual Seal design for safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- Full compliance to SIL 2/3 requirements as a standard.
- Modular design characteristics
- Available additional with 4-year warranty

Span & Range Limits:

Model	URL psi (bar)	LRL psi (bar)	Min Span
STG730/STG73L	50 (3.5)	-14.7 (-1.0)	0.5 (0.035)
STG740/STG74L	500 (35)	-14.7 (-1.0)	5 (.35)
STG770/STG77L	3000 (210)	-14.7 (-1.0)	30 (2.1)
STG78L	6000 (420)	-14.7 (-1.0)	60 (4.2)
STG79L	10000	-14.7 (-1.0)	100 (6.9)



**Figure 1 – STG700 Gauge Pressure Transmitters
feature
field-proven piezoresistive sensor
technology**

Communications/Output Options:

- Honeywell Digitally Enhanced (DE)
- HART® (version 7.0)
- FOUNDATION™ Fieldbus

All transmitters are available with the above listed communications protocols.

Description

The SmartLine family pressure transmitters are designed around a high performance piezo-resistive sensor. This one sensor actually integrates multiple sensors linking process pressure measurement with on-board static pressure (DP Models) and temperature compensation measurements. This level of performance allows the ST 700 to replace most competitive transmitters available today.

Indication/Display Option

The ST 700 modular design accommodates a basic alphanumeric LCD display.

Basic Alphanumeric LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm², Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units
- 2 Lines 16 Characters (4.13H x 1.83W mm)
- Square root output indication (√)

Simple LCD Display Features

- Modular (may be added or removed in the field)
- Supports HART protocol variant
- 0, 90, 180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm², Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units.
- Supports Flow engineering units
- 2 Lines 6 digits PV (9.95H x 4.20W mm) 8 Characters
- Square root output indication (√) and Write protect Indication
- Built in Basic Device Configuration through Internal Buttons – Range/Engineering Unit/Loop Test /Loop Calibration/Zero /Span Setting

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

System Integration

- SmartLine communications protocols all meet the most current published standards for HART/DE/Fieldbus.
- Integration with Honeywell's Experion PKS offers the following unique advantages.
- Tamper reporting
- FDM Plant Area Views with Health summaries
- All ST 700 units are Experion tested to provide the highest level of compatibility assurance

Configuration Tools

External Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offers the ability to configure the transmitter and display via three externally accessible buttons when a display option is selected. Zero/span capabilities are also optionally available via these buttons with or without selection of the display option.

Internal Two Button Configuration Option

The Simple display has two buttons that can be used for Basic configuration such as re ranging, PV Engineering unit setting, Zero/Span settings and Loop testing and calibration functions.

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any Standards compliant handheld configuration device.

Personal Computer Configuration

Honeywell's SCT 3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface. Field Device Manager (FDM) Software and FDM Express are also available for managing HART & Fieldbus device configurations.

Modular Design

To help contain maintenance & inventory costs, all ST 700 transmitters are modular in design supporting the user's ability to replace meter bodies, add indicators or change electronic modules without affecting overall performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure and due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics.

Modular Features

- Meter body replacement
- Exchange/replace electronics/comms modules*
- Add or remove integral indicator*
- Add or remove lightning protection (terminal connection)*

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

With no performance effects, Honeywell's unique modularity results in **lower inventory needs and lower overall operating costs**.

Performance Specifications

Reference Accuracy: (conformance to +/-3 Sigma)

Table 1

	Model	URL	LRL	Min Span	Maximum Turndown Ratio	Stability (% URL/Year for 10 years)	Reference Accuracy ^{1,2} (% Span) Standard/ option
Standard Accuracy	STG730	50 psi (3.5 bar)	-14.7 psi (-1.0 bar)	0.5 psi (.035 bar)	100:1	0.02	0.055 / 0.040
	STG73L	50 psi (3.5 bar)	-14.7 psi (-1.0 bar)	0.5 psi (.035 bar)			
	STG740	500 psi (35 bar)	-14.7 psi (-1.0 bar)	5 psi (.35 bar)			
	STG74L	500 psi (35 bar)	-14.7 psi (-1.0 bar)	5 psi (.35 bar)		0.015	
	STG770	3000 psi (210 bar)	-14.7 psi (-1.0 bar)	30 psi (2.1 bar)		0.02	
	STG77L	3000 psi (210 bar)	-14.7 psi (-1.0 bar)	30 psi (2.1 bar)			
	STG78L	6000 psi (420 bar)	-14.7 psi (-1.0 bar)	60 psi (4.2 bar)			
	STG79L	10000 psi (690 bar)	-14.7 psi (-1.0 bar)	100 (6.9 bar)			

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Accuracy, Span and Temperature Effect: (Conformance to +/-3 Sigma)

Table 2

			Accuracy ^{1,2} (% of Span)				Combined Zero & Span temperature Effect (% Span / 28°C (50°F))	
	Model	URL	Reference Turndown	A	B	C (see URL units)	D	E
Standard Accuracy	STG730	50 psi (3.5 bar)	25:1	0.005	0.050	2 (0.14)	0.060	0.005
	STG73L	50 psi (3.5 bar)	12.5:1			4 (60.28)	0.050	0.010
	STG740	500 psi (35 bar)	35:1			14.5 (1.0)		0.007
	STG74L	500 psi (35 bar)	35:1			14.5 (1.0)		0.010
	STG770	3000 psi (210 bar)	10:1			300 (21)		0.010
	STG77L	3000 psi (210 bar)	8.5:1			350 (24.7)		0.015
	STG78L	6000 psi (420 bar)	12:1			500 (35)		0.050
	STG79L	10000 psi (690 bar)	10:1	0.025	0.040	1000 (69)	0.150	0.100
High Accuracy Option	STG730	50 psi (3.5 bar)	25:1	0.005	0.035	2 (0.14)	0.060	0.005
	STG73L	50 psi (3.5 bar)	12.5:1			4 (60.28)	0.050	0.010
	STG740	500 psi (35 bar)	35:1			14.5 (1.0)		0.007
	STG74L	500 psi (35 bar)	35:1			14.5 (1.0)		0.010
	STG770	3000 psi (210 bar)	10:1			300 (21)		0.010
	STG77L	3000 psi (210 bar)	8.5:1			350 (24.7)		0.015
	STG78L	6000 psi (420 bar)	12:1			500 (35)		0.050
			Turn Down Effect				Temp Effect	
			$\pm [A + B] \quad \text{if Span} \geq C$ $\pm \left[A + B \left(\frac{C}{Span} \right) \right] \quad \text{if Span} < C$				$\pm [D + E \left(\frac{URL}{Span} \right)]$	

Total Performance (% of Span):

Total Performance Calculation:
$$= \pm \sqrt{(\text{Accuracy})^2 + (\text{Temperature Effect})^2}$$

Total Performance Examples (for comparison): standard accuracy 5:1 Turndown, +/-50 °F (28°C) shift

- STG730 @ 100 psi: 0.101% of span

STG740 @ 100 psi: 0.101% of span

STG770 @ 600 psi: 0.074% of span

STG78L @ 1200 psi: 0.305% of span
- STG73L @ 100 psi: 0.123% of span

STG74L @ 100 psi: 0.114% of span

STG77L @ 600 psi: 0.137% of span

STG79L @ 2000 psi: 0.653% of span

Typical Calibration Frequency:

Calibration verification is recommended every two (2) years

Notes:

1. Terminal Based Accuracy - Includes combined effects of linearity, hysteresis, and repeatability. Analog output adds 0.005% of span.
2. For zero based spans and reference conditions of: 25 °C (77°F) for LRV >= 0 psia, 10 to 55% RH, and 316 Stainless Steel barrier diaphragm.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature ¹	25 1	77 2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Meter Body Temperature ²	25 1	77 2	-40 to 110	-40 to 230	-40 to 125	-40 to 257	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vac. Region – Min. Pressure mmHg absolute inH ₂ O absolute	Atmospheric Atmospheric		25 13		2 (short term) ³ 1 (short term) ³			
Supply Voltage	10.8 to 42.4 Vdc at terminals							
Load Resistance	0 to 1,440 ohms (as shown in Figure 2)							
Maximum Allowable Working Pressure (MAWP) ^{4, 5} (ST700 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)	ST 730 50 psi (3.5 bar)		ST 73L 50 psi (3.5 bar)					
	ST 740 500 psi (35 bar)		ST 74L 500 psi (35 bar)					
	ST 770 3000 psi (210 bar)		ST 77L 3000 psi (210 bar)					
			ST 78L 6000 psi (420 bar)					
			ST 7 L 10000 psi (6 0 bar)					

¹ LCD Display operating temperature -20°C to +70°C Storage temperature -30°C to 80°C.

² Silicone 704 minimum temperature rating is 0°C (32°F). CTFE minimum temperature rating is -30°C (-22°F).
NEOBEE® M-20 minimum temperature rating is -15°C (5°F). NEOBEE® is a registered trademark of Stepan Company.

³ Short term equals 2 hours at 70°C (158°F).

⁴ Units can withstand overpressure of 1.5 x MAWP without damage.

⁵ Consult the factory for MAWP of ST 700 transmitters with CRN approval.

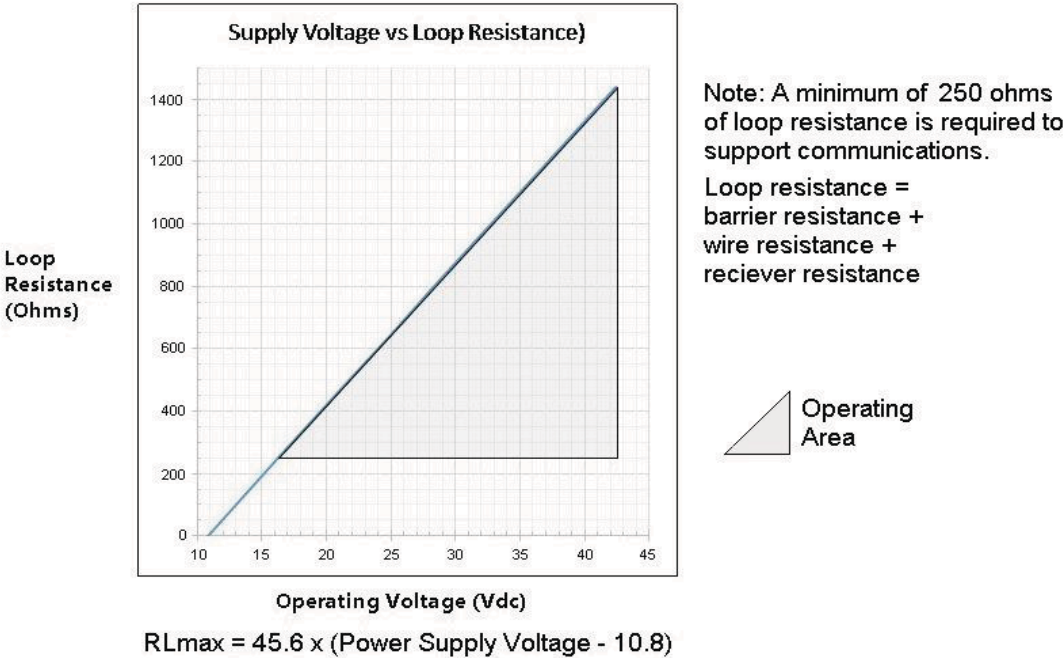


Figure 2 - Supply voltage and loop resistance chart & calculations

Performance Under Rated Conditions – All Models

Parameter	Description		
Analog Output Digital Communications:	Two-wire, 4 to 20 mA (HART & DE Transmitters only) Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITK 6.0.1 compliant All transmitters, irrespective of protocol have polarity insensitive connection.		
HART & DE Output Failure Modes (NAMUR for DE Units requires selecting display and configuration buttons or factory configuration)	Compliance: Normal Limits: Failure Mode:	Honeywell Standard: 3.8 – 20.8 mA ≤ 3.6 mA and ≥ 21.0 mA	NAMUR NE 43 3.8 – 20.5 mA ≤ 3.6 mA and ≥ 21.0 mA
Supply Voltage Effect	0.005% span per volt.		
Transmitter Turn on Time (includes power up & test algorithms)	HART or DE: 2.5 sec Foundation Fieldbus: Host dependant		
Response Time (delay + time constant)	<u>DE/HART Protocol</u> 100ms	<u>FOUNDATION Fieldbus</u> 150ms (Host Dependant)	
Damping Time Constant	HART: Adjustable from 0 to 32 seconds in 0.1 increments. Default Value: 0.5 seconds DE: Discrete values 0, 0.16, 0.32, 0.48, 1, 2, 4, 8, 16, 32 seconds. Default Value: 0.48 seconds		
Vibration Effect:	Less than +/- 0.1% of URL w/o damping Per IEC60770-1 field or pipeline, high vibration level (10-2000Hz: 0.21 displacement/3g max acceleration)		
Electromagnetic Compatibility	IEC 61326-3-1		
Lightning Protection Option	Leakage Current: 10uA max @ 42.4VDC 93C Impulse rating: 8/20uS 5000A (>10 strikes) 10000A (1 strike min.) 10/1000uS 200A (> 300 strikes)		

Materials Specifications (see model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	STG700: 316L SS, Hastelloy® C-276 ² , Monel® 400 ³ , Tantalum STG70L: 316L SS, Hastelloy C-276
Process Head Material	STG700: Carbon Steel (Zinc Plated) ⁵ , 316 SS ⁴ , Hastelloy® C-276 ⁶ , Monel® 400 ⁷ STG70L: 316L SS, Hastelloy® C-276 ⁶
Vent/Drain Valves & Plugs ¹	STG700: 316 SS ⁴ , Hastelloy C-276 ² , Monel 400 ⁷ STG70L: N/A
Head Gaskets	STG700: Glass-filled PTFE standard. Viton® and graphite are optional. STG70L: N/A
Meter Body Bolting	STG700: Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts and nuts or NACE A286 SS bolts and 304 SS nuts STG70L: N/A
Mounting Bracket	Carbon Steel (Zinc-plated) or 304 Stainless Steel or 316 Stainless Steel. See Figure 3 and Figure 5
Fill Fluid	Silicone, CTFE, NEOBEE M-20, Silicone 704.
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets NEMA 4X, IP66, IP67 and NEMA 7 (explosion proof). All stainless steel housing is optional.
Process Connections	STG700: ½ -inch NPT(female), DIN 19213 (standard) STG70L: ½ -inch NPT(female), ½ -inch NPT male, 9/16 Aminco, DIN19213 (except STG79L), G½ -B Male Thread
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See Figure 4 and Figure 6
Net Weight	STG700: 8.3 pounds (3.8 Kg). STG70L: 3.6 pounds (1.6 Kg) with Aluminum Housing

¹ Vent/Drains are sealed with Teflon®² Hastelloy® C-276 or UNS N10276³ Monel® 400 or UNS N04400⁴ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.⁵ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.⁶ Hastelloy® C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy® C-276⁷ Monel® 400 or UNS N04400. Supplied as indicated or as Grade M30C, the casting equivalent of Monel® 400

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)

Foundation Fieldbus (FF)

Power Supply Requirements

Voltage: 9.0 to 32.0Vdc at terminals

Steady State Current: 17.6mAdc

Software Download Current: 27.4mAdc

Available Function Blocks

Block Type	Qty	Execution Time
Resource	1	n/a
Transducer	1	n/a
Diagnostic	1	n/a
Analog Input	1*	30 ms
PID w/Autotune	1	45 ms
Integrator	1	30 ms
Signal Char (SC)	1	30 ms
LCD Display	1	n/a
Flow Block	1	30 ms
Input Selector	1	30 ms
Arithmetic	1	30 ms

* AI block may have two (2) additional instantiations.
All available function blocks adhere to FOUNDATION Fieldbus standards. PID blocks support ideal & robust PID algorithms with full implementation of Auto-tuning.

Link Active Scheduler

Transmitters can perform as a backup Link Active Scheduler and take over when the host is disconnected. Acting as a LAS, the device ensures scheduled data transfers typically used for the regular, cyclic transfer of control loop data between devices on the Fieldbus.

Number of Devices/Segment

Entity IS model: 6 devices/segment

Schedule Entries

18 maximum schedule entries

Number of VCR's: 24 max

Compliance Testing: Tested according to ITK 6.0.1

Software Download

Utilizes Class-3 of the Common Software Download procedure as per FF-883 which allows the field devices of any manufacturer to receive software upgrades from any host.

Honeywell Digitally Enhanced (DE)

DE is a Honeywell proprietary protocol which provides digital communications between Honeywell DE enabled field devices and Hosts.

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Standard Diagnostics

ST 700 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown

Critical Diagnostics

HART DD/DTM Tools	Basic Display	Simple Display
Electronic Module DAC Failure	Electronics module fault	Fault Comm EI
Meter Body NVM Corrupt	Meter Body fault	Fault Mtrbody
Config. Data Corrupt	Electronics module fault	Fault Comm EI
Electronic Module Diag Failure	Electronics module fault	Fault Comm EI
Meter Body Critical Failure	Meter Body fault	Fault Mtrbody
Sensor Comms Timeout	Meter Body Comm fault	Fault Mbd Com

Non-Critical Diagnostics

HART DD/DTM Tools
Display Failure
Electronic Module Comm Failure
Meter Body Excess Correct
Sensor Over Temperature
Fixed Current Mode
PV Out of Range
No Factory Calibration
No DAC Compensation
LRV Set Error – Zero Config. Button
URV Set Error – Zero Config. Button
AO Out of Range
Loop Current Noise
Meter Body Unreliable Comm
Tamper Alarm,
No DAC Calibration
Sensor Supply Voltage Low

Hazardous Areal Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
A	FM Approvals™ USA	Explosionproof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; T6..T5 Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Class II, Zone 21, AEx tb IIIC T95° Db	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G: T4 Class I, Zone 0, AEx ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
			Foundation Fieldbus	Note 2b	-50 °C to 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D locations, T4 Class I, Zone 2, AEx nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-
		STANDARDS: FM Class 3600:2011; FM Class 3610: 2010; FM Class 3611: 2004; FM Class 3615: 2006; FM Class 3616: 2011; FM Class 3810: 2005; ANSI/ISA 60079-0: 2013; ANSI/UL 60079-1: 2015; ANSI/UL 60079-11: 2014; ANSI/ISA 60079-15: 2012; ANSI/UL 60079-26: 2017; ANSI/UL 60079-31: 2015; ANSI/NEMA 250: 2003; ANSI/ IEC 60529: 2004			
B	Canadian Standards Association (CSA) USA and Canada	Explosion Proof: Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T6..T5 Class I Zone 1 AEx db IIC T6..T5 Ga/Gb Ex db IIC T6..T5 Ga/Gb Zone 22 AEx tb IIIC T95° Db Ex tb IIIC T95° Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T4 Class I Zone 0, AEx ia IIC T4 Ga Class I Zone 2, AEx ic IIC T4 Gc Ex ia IIC T4 Ga Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F, G; Class III, Division 2, T4 Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
		STANDARDS: CSA C22.2 No. 0-10; CSA C22.2 No. 94-M91; CSA C22.2 No. 25-1966; CSA C22.2 No. 30-M1986; CSA C22.2 No. 142-M1987; CSA C22.2 No. 157-92; CSA C22.2 No. 213-M1987; CSA-C22.2 No. 60529:05; CSA-C22.2 No. 60079-0:11; CSA-C22.2 No. 60079-1:11; CSA-C22.2 No. 60079-11:11; CSA-C22.2 No. 60079-15:12; CSA-C22.2 No. 60079-31:12; ISA 12.12.01-2010; ISA 60079-0: 2009; ISA 60079-11: 2011; ISA 60079-15: 2009; ISA 60079-26: 2008; ISA-60079-27:2007 (12.02.04)-2006 (R2011); UL 913 Ed. 6; UL 916:1998; ANSI/ISA-12.27.01-2011			
C	ATEX	Flameproof: SIRA 12ATEX2233X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: SIRA 12ATEX2233X II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: SIRA 12ATEX4234X II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: SIRA 12ATEX4234X II 3 G Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) II 3 G Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: EN 60079-0: 2012/A11: 2013; EN 60079-1: 2014; EN 60079-7: 2015; EN 60079-11: 2012; EN 60079-26: 2015; EN 60079-31: 2009			
D	IECEX World	Flameproof: IECEx SIR 12.0100X Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: IECEx SIR 12.0100X Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: IECEx SIR 12.0100X Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: IECEx SIR 12.0100X Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: IEC 60079-0: 2011; IEC 60079-1: 2014; IEC 60079-7: 2017; IEC 60079-11: 2011; IEC 60079-26: 2014; IEC 60079-31: 2013			

E	SAEx South Africa	Flameproof : Ex d IIC T6...T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
F	INMETRO Brazil	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50°C TO 70°C
			Foundation Fieldbus	Note 2b	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-
G	NEPSI CHINA	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-

H	KOSHA Korea	Flameproof : Ex d IIC T4, T5, T6 Ex tD A21 IP66/IP67 T95°C...T120 °C	All	Note 1	T4: -50°C TO 85°C T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4	4-20 mA / DE/ HART	Note 2	Ta= -50 °C to 70°C
			Foundation Fieldbus	Note 2	Ta= -50 °C to 70°C
		Enclosure: IP66/ IP67	All	All	-
I	EAC Russia, Belarus and Kazakhstan	Flameproof: Ga/Gb Ex d IIC T6..T5 Ex tb IIIC Db T 85°C	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ga Ex ia IIC T4 X FISCO Field Device (Only for FF Option) Ga Ex ia IIC T4 X	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Non Sparking: 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ga Ex ic IIC T4 X FISCO Field Device (Only for FF Option) 2 Ex ic IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	
J	CCoE INDIA	Flameproof: Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Non Sparking Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
K	UATR UKRAINE	Flameproof: II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:
Voltage= 11 to 42 V DC Current= 4-20 mA Normal
 = 10 to 30 V (FF) = 30 mA (FF)
2. Intrinsically Safe Entity Parameters
 - a. Analog/ DE/ HART Entity Values:
Vmax= Ui = 30V Imax= li= 105mA Ci = 4.2nF Li =984 uH Pi=0.9W
Transmitter with Terminal Block Revision E or Later
Vmax= Ui = 30V Imax= li= 225mA Ci = 4.2nF Li = 0 Pi=0.9W
Note : Transmitter with Terminal Block Revision E or later
The revision is on the label that is on the module. There will be two lines of text on the label:
 - First is the Module Part #: 50049839-001 or 50049839-002
 - Second line has the supplier information, along with the REVISION:
XXXXXX-EXXXX, THE “X” is production related, THE POSITION of the “E” IS THE REVISION.
 - b. Foundation Fieldbus- Entity Values
Vmax= Ui = 30V Imax= li= 180mA Ci = 0nF Li = 984 uH Pi =1W
Transmitter with Terminal Block Revision F or Later
Vmax= Ui = 30V Imax= li= 225mA Ci =0nF Li = 0 Pi =1 W
FISCO Field Device
Vmax= Ui = 17.5V Imax= li= 380 mA Ci = 0nF Li = 0 Pi =5.32 W
Note : Transmitter with Terminal Block Revision F or later
The revision is on the label that is on the module. There will be two lines of text on the label:
 - First is the Module Part #: 50049839-003 or 50049839-004
 - Second line has the supplier information, along with the REVISION:
XXXXXX-EXXXX, THE “X” is production related, THE POSITION of the “E” IS THE REVISION.

Approval Certifications:

Marine Certificates	This certificate defines the certifications covered for the ST 800 Pressure Transmitter family of products, including the SMV 800 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications. For SmartLine Pressure Transmitter and SMV800 Smart Multivariable Transmitter
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001
	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)
SIL 2/3 Certification	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.

Other Certification Options

Materials

- NACE MRO175, MRO103, ISO15156

Mounting & Dimensional Drawings)

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

Mounting Configurations: (Dual head design)

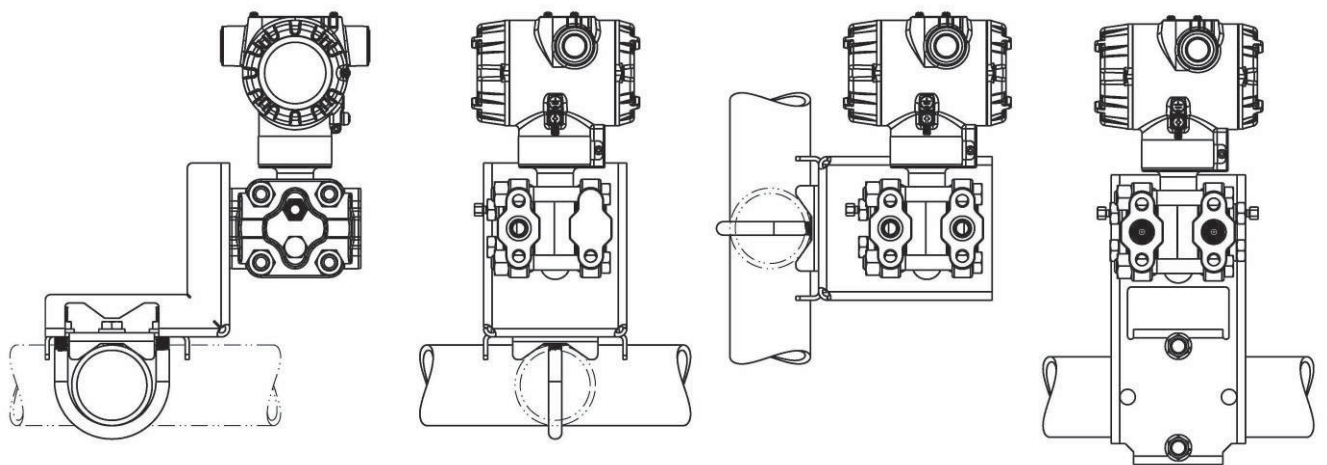


Figure 3 – Mounting options: (Dual head design)

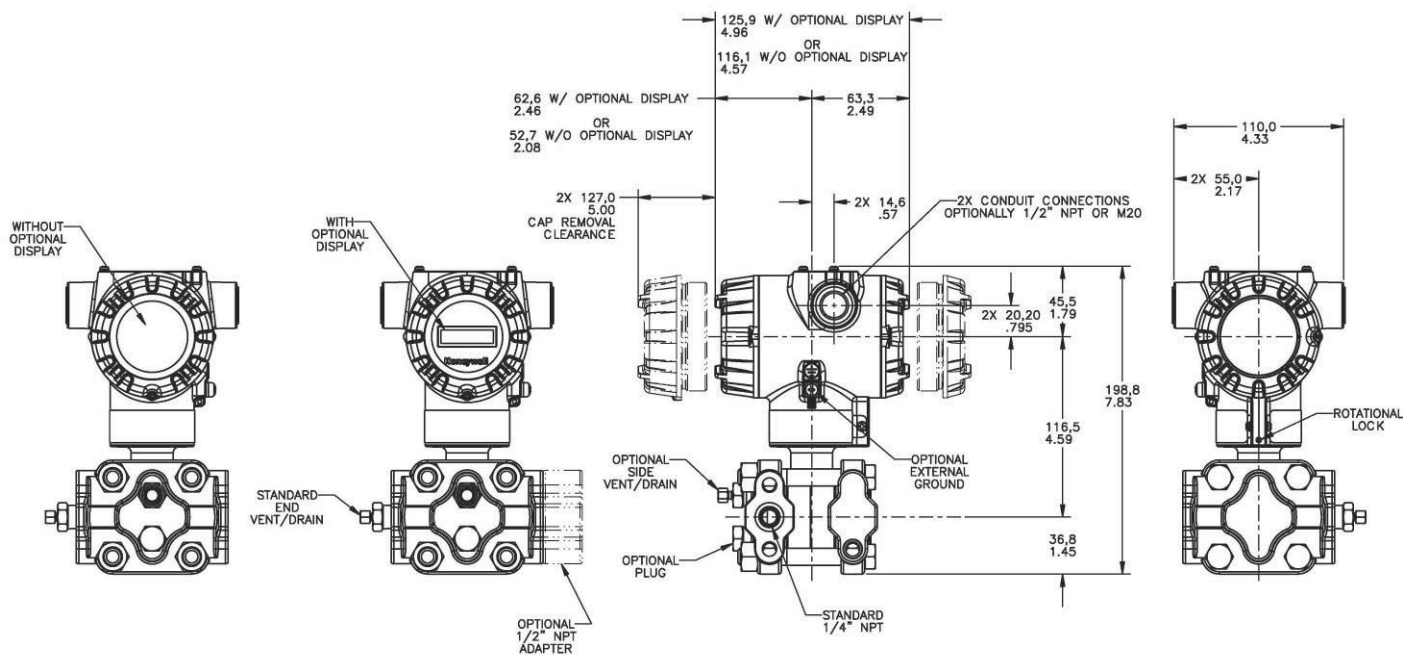


Figure 4 – Typical dimensions of STG740 & STG770 for reference

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

Mounting Configurations (Inline Designs)

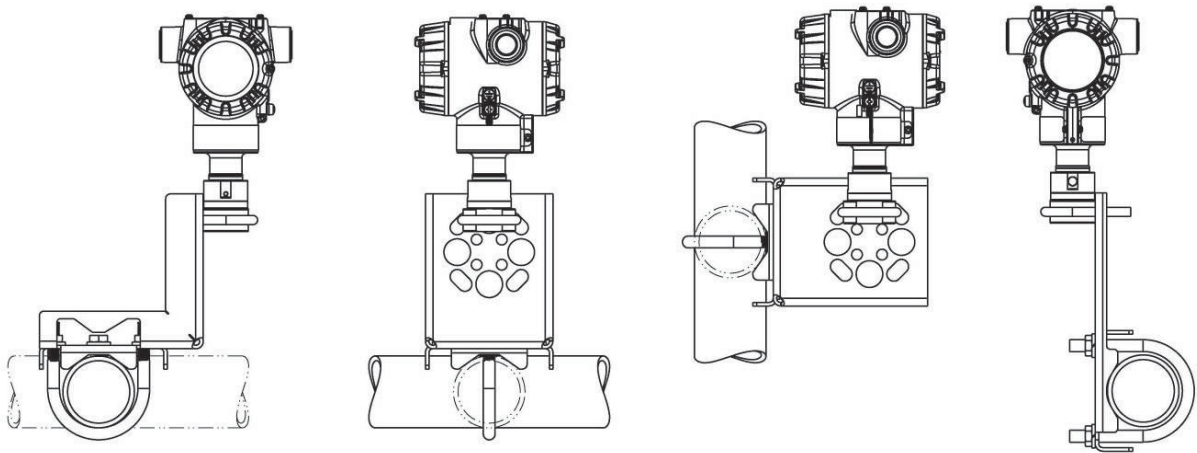


Figure 5 – Mounting Options (Inline Design)

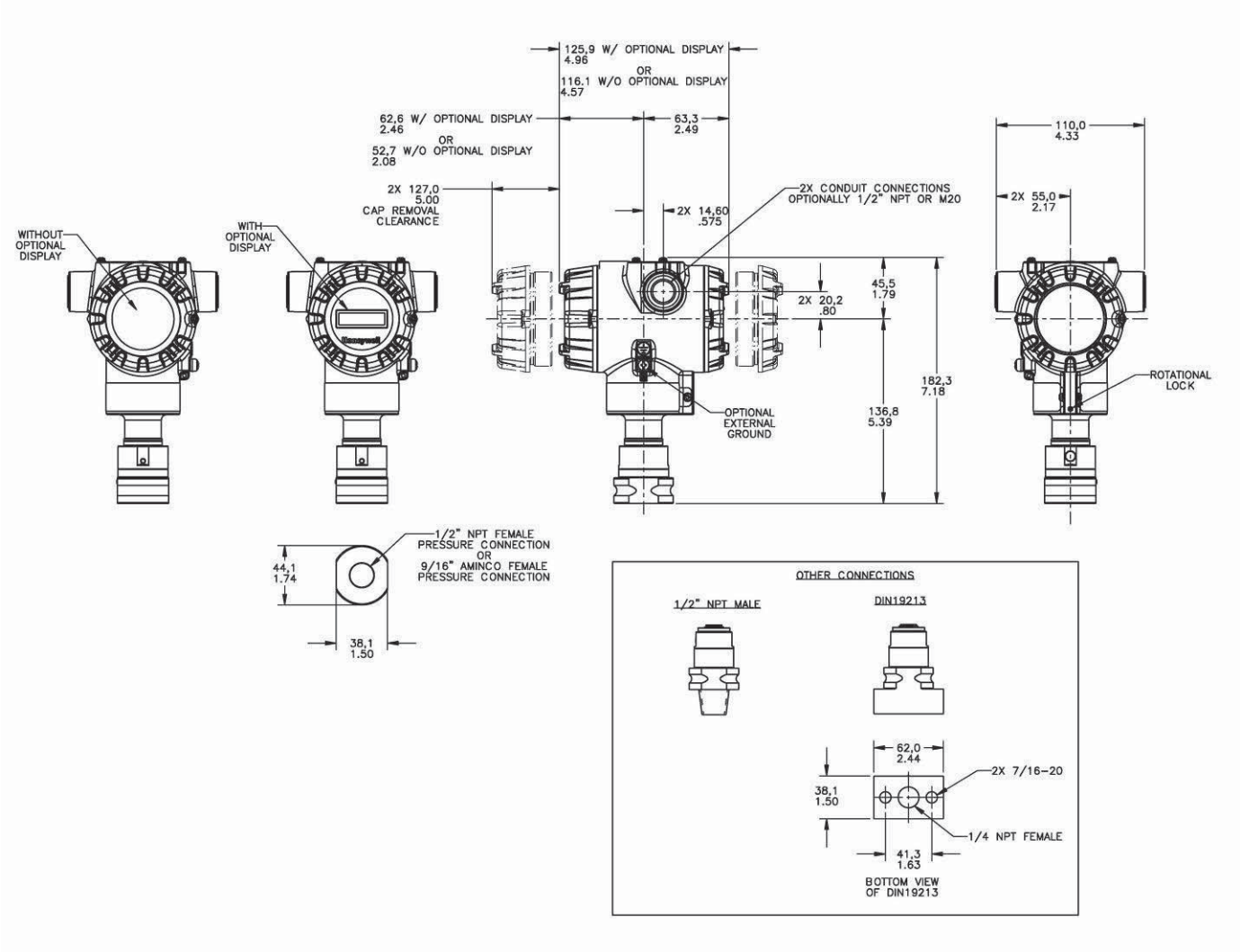


Figure 6 – Typical dimensions of STG74L, STG77L, STG78L, & STG79L for reference

Model Selection Guides are subject to change and are inserted into the specifications as guidance only. Prior to specifying or ordering a model check for the latest revision Model Selection Guides which are published at: www.honeywellprocess.com/en-US/pages/default.aspx

Model Selection Guide

Model STG700
Gauge Pressure Transmitters

Model Selection Guide
34-ST-16-102 Issue 24

Instructions: Make selections from all Tables using column below the proper arrow. Asterisk indicates availability. Letter (a) refers to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key

STG

I

II

III

IV

V

VI

VII

VIII

IX

KEY NUMBER	URL/Max Span	LRL	Min Span	Units
Gauge Dual Head	50 (3.5)	-14.7 (-1.0)	0.5 (.035)	psi (bar)
	500 (35)	-14.7 (-1.0)	5 (.35)	psi (bar)
	3000 (210)	-14.7 (-1.0)	30 (2.1)	psi (bar)
Gauge In-Line	50 (3.5)	-14.7 (-1.0)	0.5 (.035)	psi (bar)
	500 (35)	-14.7 (-1.0)	5 (.35)	psi (bar)
	3000 (210)	-14.7 (-1.0)	30(2.1)	psi (bar)
	6000 (420)	-14.7 (-1.0)	60 (4.2)	psi (bar)
	10000 (690)	-14.7 (-1.0)	100 (6.9)	psi (bar)

Selection	Availability			
STG730	↓			
STG740	↓			
STG770	↓			
STG73L		↓		
STG74L		↓		
STG77L			↓	
STG78L			↓	
STG79L				↓

TABLE I	METER BODY SELECTIONS			
a. Process Head & Diaphragm Materials	Process Head/Reference Head Material ^{1b}		Barrier Diaphragm Material	
	Plated Carbon Steel / Plated Carbon Steel		316L SS Hastelloy® C - 276 Monel 400® Tantalum	
	316 Stainless Steel / 316 Stainless Steel		316L SS Hastelloy C - 276 Monel 400 Tantalum	
	Hastelloy C - 276 / 316 Stainless Steel		Hastelloy C - 276 Tantalum	
	Monel 400 / 316 Stainless Steel		Monel 400	
b. Fill Fluid	Silicone Oil 200			
	Fluorinated Oil CTFE			
	Silicone Oil 704			
	NEOBEE® M-20			
c. Process Connection	Size/Type		Material	
	9/16" Aminco		Same as Process Head	
	1/2" NPT (female)		Same as Process Head ^{1a}	
	1/2" NPT (male)		Same as Process Head	
	DIN 19213 (1/4" female NPT)		Same as Process Head	
	G 1/2 B Threaded Fitting		Same as Process Head	
	M20 (male)		Same as Process Head	
d. Bolt/Nuts Materials	None			
	Carbon Steel			
	316 SS			
	Grade 660 (NACE A286) with NACE 304 SS Nuts			
	Grade 660 (NACE A286) Bolts & Nuts			
	Monel K500			
	Super Duplex BTM			
e. Vent/Drain Type/Location	Head Type	Vent Type	Location	Vent Material
	None	None	None	None
	Single Ended	None	None	None
	Single Ended	Standard Vent	Side	Matches Head Material ¹
	Single Ended	Center Vent	Side	Stainless Steel Only
	Dual Ended	Standard Vent	End	Matches Head Material ¹
	Dual Ended	Center Vent	End	Stainless Steel only
	Dual Ended	Std Vent/Plug	Side/End	Matches Head Material ¹
f. Gasket Materials	None			
	Teflon® or PTFE (Glass Filled)			
	Viton®			
	Graphite			

A	*	*		
B	*	*		
C	*	*		
D	a	a		
E	*	*	*	*
F	*	*	*	*
G	*	*		
H	a	a		
J	*	*	*	*
K	a	a		
L	a	a		
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
4	*	*	*	*
A	*	*	*	*
G	*	*	*	*
H	*	*	*	*
D	*	*	*	*
B	*	*	*	*
N	*	*	*	*
0	*	*	*	*
C	*	*		
S	*	*		
N	*	*		
K	p	p		
M	p	p		
D	p	p		
B	*	*		
0	*	*	*	*
1	*	*	*	*
2	*	*	*	*
3	t	t		
4	*	*		
5	t	t		
6	*	*		
0	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*

¹ Except Carbon Steel Heads shall use 316SS Vent/Drain & Plugs and or 1/2" adapters
^{1a} STG730,740,770 supplied via 1/2" flange adapter same material as process head except carbon steel shall use 316 SS
^{1b} Reference head available with Dual Head Gage models only. In-Line Gage models are supplied with Process Head only.

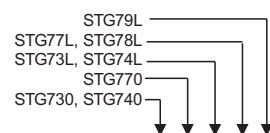


TABLE II	Meter Body & Connection Orientation		
Head/Connect Orientation	Standard	High Side Left, Low Side Right ² / Std Head Orientation	
	Reversed	Low Side Left, High Side Right ² / Std Head Orientation	
	90/Standard	High Side Left, Low Side Right ² / 90° Head Rotation	

1	*	*	*	*
2	*	*	*	*
3	h	h	*	*

TABLE III	AGENCY APPROVALS			
Approvals	No Approvals Required			
	<FM> Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof			
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof			
	ATEX Explosion proof, Intrinsically Safe & Non-incendive			
	IECEX Explosion proof, Intrinsically Safe & Non-incendive			
	SAEx Explosion proof, Intrinsically Safe & Non-incendive			
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive			
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive			
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive			
	EAC Customs Union (Russia,Belarus,Kazakhstan)Ex Approval Flame proof, Intrinsically Safe			
	ATEX/IECEX Explosion proof, Intrinsically Safe & Non-incendive			
	CCoE Explosion proof, Intrinsically Safe & Non-incendive			
	UATR Flameproof, Intrinsically Safe & Dustproof			

0	*	*	*	*
A	*	*	*	*
B	*	*	*	p
C	*	*	*	*
D	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H	*	*	*	*
I	*	*	*	*
1	*	*	*	*
J	*	*	*	*
K	*	*	*	*

TABLE IV	TRANSMITTER ELECTRONICS SELECTIONS			
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection	
	Polyester Powder Coated Aluminum	1/2 NPT	None	
	Polyester Powder Coated Aluminum	M20	None	
	Polyester Powder Coated Aluminum	1/2 NPT	Yes	
	Polyester Powder Coated Aluminum	M20	Yes	
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None	
	316 Stainless Steel (Grade CF8M)	M20	None	
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes	
b. Output/ Protocol	Analog Output		Digital Protocol	
	4-20mA dc		HART Protocol	
	4-20mA dc		DE Protocol	
c. Customer Interface Selections	Indicator		Ext Zero, Span & Config Buttons	
	None		None	
	None		Yes (Zero/Span Only)	
	Basic		None	
	Basic		EN	
	Basic		EN	
	Standard (w/internal Zero, Span & Conf Buttons)		None	
			English	

A__	*	*	*	*
B__	*	*	*	*
C__	*	*	*	*
D__	*	*	*	*
E__	*	*	*	*
F__	*	*	*	*
G__	*	*	*	*
H__	*	*	*	*

H	*	*	*	*
D	*	*	*	*
F	*	*	*	*

__0	*	*	*	*
__A	f	f	f	f
__B	*	*	*	*
__C	*	*	*	*

__D	u	u	u	u
-----	---	---	---	---

TABLE V	CONFIGURATION SELECTIONS			
a. Application Software	Diagnostics			
	Standard Diagnostics			
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³	
	Disabled	High> 21.0mA dc	Honeywell Std	(3.8 - 20.8 mA dc)
	Disabled	Low< 3.6mA dc	Honeywell Std	(3.8 - 20.8 mA dc)
	Enabled	High> 21.0mA dc	Honeywell Std	(3.8 - 20.8 mA dc)
	Enabled	Low< 3.6mA dc	Honeywell Std	(3.8 - 20.8 mA dc)
	Enabled	N/A	N/A	Fieldbus
	Disabled	N/A	N/A	Fieldbus
c. General Configuration	General Configuration			
	Factory Standard Custom Configuration (Unit Data Required from customer)			

1__	*	*	*	*
-----	---	---	---	---

1	f	f	f	f
2	f	f	f	f
3	f	f	f	f
4	f	f	f	f
5	g	g	g	g
6	g	g	g	g

__S	*	*	*	*
__C	*	*	*	*

² Left side/Right side as viewed from the customer connection perspective

³ NAMUR Output Limits are configurable by customer

TABLE VI	CALIBRATION & ACCURACY SELECTIONS		
a. Accuracy and Calibration	Accuracy	Calibrated Range	Calibration Qty
	Standard	Factory Standard	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration
	High Accuracy	Factory Standard	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Single Calibration

	STG79L				
	STG77L, STG78L				
	STG73L, STG74L				
	STG770				
	STG730, STG740				
A	*	*	*	*	*
B	*	*	*	*	*
E	S	S	S	S	S
F	S	S	S	S	S

TABLE VII	ACCESSORY SELECTIONS	
a. Mounting Bracket	Bracket Type	Material
	None	None
	Angle Bracket	Carbon Steel
	Angle Bracket	304 SS
	Angle Bracket	316 SS
	Marine Approved Bracket	Carbon Steel
	Marine Approved Bracket (In-Line)	Carbon Steel
	Marine Approved Bracket	304 SS
	Marine Approved Bracket (In-Line)	304 SS
	Flat Bracket	Carbon Steel
	Flat Bracket	304 SS
	Flat Bracket	316 SS
b. Customer Tag	Customer Tag Type	
	No customer tag	
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters	
	No Conduit Plugs or Adapters Required	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter	
	1/2 NPT 316 SS Certified Conduit Plug	
	M20 316 SS Certified Conduit Plug	
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)	
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)	

0	---	*	*	*	*	*
1	---	*	*	*	*	*
2	---	*	*	*	*	*
3	---	*	*	*	*	*
8	---	*	*			
9	---			*	*	*
4	---	*	*			
A	---			*	*	*
5	---	*	*	*	*	*
6	---	*	*	*	*	*
7	---	*	*	*	*	*

_0	__	*	*	*	*	*
_1	__	*	*	*	*	*
2		*	*	*	*	*

__A0	*	*	*	*	*
__A2	n	n	n	n	n
__A6	n	n	n	n	n
__A7	m	m	m	m	m
__A8	n	n	n	n	n
__A9	m	m	m	m	m

TABLE VIII	OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))
Certifications & Warranty	No additional options
	NACE MR0175; MR0103; ISO15156 (FC33338) Process wetted parts only
	NACE MR0175; MR0103; ISO15156 (FC33339) Process wetted and non-wetted parts
	Marine (DNV, ABS, BV, KR, LR)
	EN10204 Type 3.1 Material Traceability (FC33341)
	Certificate of Conformance (F3391)
	Calibration Test Report & Certificate of Conformance (F3399)
	Certificate of Origin (F0195)
	FMEDA (SIL 2/3) Certification (FC33337)
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)
	Cert Clean for O ₂ or CL ₂ service per ASTM G93
	PMI Certification ¹
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
	Extended Warranty Additional 4 years

00	*	*	*	*	*	
FG	*	*	*	*	*	b
F7	c	c	c	c	c	
MT	d	d	d	d	d	
FX	*	*	*	*	*	
F3	*	*	*	*	*	b
F1	*	*	*	*	*	
F5	*	*	*	*	*	
FE	j	j	j	j	j	
TP	*	*	*	*	*	
OX	e	e	e	e	e	
PM	*	*	*	*	*	
01	*	*	*	*	*	b
02	*	*	*	*	*	
03	*	*	*	*	*	
04	*	*	*	*	*	

TABLE IX	Manufacturing Specials
Factory	Factory Identification

0000	*	*	*	*	*
------	---	---	---	---	---

RESTRICTIONS

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
a			VIII	FG, F7
c	Id	__ _ 0,N,K,D,B __ _	I a	D,H,K,L __ _
d	IV a	C,D,G,H __	VIIa	1,2,3,5,6,7 __
e	Ib	_ 2 _		
f			IV b	_ F _
g			IVb	_ H,D _
h			Ie	_ 4, 5, 6 _
			VIIa	1,2,3,4,5,6,7,8 __
j	IV b	_ H _	Vb	_ 1,2,6 _
m	IV a	B,D,F,H __		
n	IV a	A,C,E,G __		
p			III	B- No CRN number available
s	I a	A, E _		
t			Ia	J, K, L _
u	IVb	_ H _		
b	Select Only one option from this group			

¹The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE ACCESSORY KITS

Description	Kit Number
Integrally Mounted Basic Indicator Kit (Compatible with all Electronic Modules)	50049911-501
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50075472-532
Terminal Strip w/Lightning Protection Kit for FFB Module	50075472-534
Terminal Strip w/o Lightning Protection for HART or DE Modules	50075472-531
Terminal Strip w/o Lightning Protection FFB-Module	50075472-533
HART Electronics Module	50049849-501
HART Electronics Module w/connection for external configuration buttons	50049849-502
DE Electronics Module	50049849-503
DE Electronics Module w/connection for external configuration buttons	50049849-504
FFB Electronics Module Kit	50049849-509
FFB Electronics Module w/connection for external configuration buttons	50049849-510
Standard Display Module	50126003-501

PRODUCT MANUALS

Description	Part Number
ST 700 Smart Transmitter User Manual - English	34-ST-25-44
ST 700 Smart Transmitter HART/DE Communications Manual - English	34-ST-25-47
sT 700 Smart Transmitter Safety Manual - English	34-ST-25-37
ST700 Smart Transmitter Foundation Fieldbus Manual - English	34-ST-25-48
ST 700 Smart Transmitter Function Block Manual - English	34-ST-25-49

All product documentation is available at www.honeywellprocess.com.

571292/2024/PS-SR-PM

Sales and Service

For application assistance, current specifications, ordering, pricing, and name of the nearest Authorized Distributor, contact one of the offices below.

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1300-36-04-70

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Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

AMERICAS

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Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Pressure
Transmitters visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

Process Solutions

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1250 W Sam Houston Pkwy S
Houston, TX 77042

Honeywell Control Systems Ltd
Honeywell House, Skimped Hill Lane
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061



www.honeywellprocess.com

34-ST-03-102
Jan 2021

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HVAC	PT	20SAFI2CPR016	Pressure Transmitter (DP Type)	PT-2 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	30SAFI2CPR015	Pressure Transmitter (DP Type)	PT-1 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	30SAFI2CPR016	Pressure Transmitter (DP Type)	PT-2 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	40SAFI2CPR015	Pressure Transmitter (DP Type)	PT-1 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	40SAFI2CPR016	Pressure Transmitter (DP Type)	PT-2 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	50SAFI2CPR015	Pressure Transmitter (DP Type)	PT-1 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021
HVAC	PT	50SAFI2CPR016	Pressure Transmitter (DP Type)	PT-2 AT UAF Fan Outlet Of UAF	NA	ESP Building	Honeywell	0-1000mmwc	0-150mmwc	65mmwc	YSTDB10-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000	PE-V0-417-554-A021

571292/2024/IPS-SR-PM

Item: Smart Line DP - TYPE Pressure Transmitter			
Engineering Units : Flow : Liquid - M3 / Hr, Steam Kg / Hr, Pressure : Kg / cm2 , Temperature : Deg C, Level : mmWC			SHEET 06 OF 9
Model	Decodification	Description	
General	Make	Honeywell	
	Function	Transmission & Indication	
	Model No.	YSTD810-E1AC4AS-1-C-AHC-11C-B-11A0-F1(PT)-0000 ; Y : Epoxy Polyester Powder Coated Hybrid Paint + 5Pin Plug & Socket connector	
	Qty	As per attached BOM	
	Tag No.	As per attached BOM	
	Calibration Range	As per attached BOM	
	Sensor	Piezoresistive	
	Supply Voltage	10.8 to 42.4 V DC	
	Load Resistance	600 ohms @24V DC	
	Communication	Hart Protocol	
	Display	2 Lines 16 Characters (4.13H x 1.83W mm)	
	Reference Accuracy	0.035% of Span	
	Turndown Ratio	100:1	
	Stability	0.015% of URL per year for 15 Years	
	MAWP	3.45 Bar	
	Maximum Allowed Working Temperature	125 Deg.C (for Temp Higher than 125 Deg C, a suitable length of impulse line to be used, considering 100 Deg.C temperature drop for every One meter length of impulse pipe)	
	Protection Class	IP 67	
	Area Classification	Hazardous Area	
	Connection Location	Side/Side	
STD810	Instrument Range	Min Span 0 to 0.25 mbar to Max Span 0 to 25 mbar	
E	Process Wetted Heads & Diaphragm Materials	Process Head Material : 316 Stainless steel & Diaphragm Material : 316L Stainless Steel	
1	Fill Fluid	Silicone Oil 200	
A	Process Connection	1/4" NPT (F)	
C	Bolt/Nut Materials	Carbon Steel	
4	Vent/Drain Type/Location	Head Type : Dual Ended, Vent Type : Standard Vent, Location : End & Vent material : Matches Head Material'	
A	Gasket Materials	Teflon or PTFE (Glass Filled)	
S	Static Pressure	Standard Static Pressure	
1	Head/Connect Orientation	Standard, High Side Left, Low Side Right ² / Std Head Orientation	
C	Approvals	ATEX Explosion proof, Intrinsically Safe & Non-incendive	
A	Electronic Housing Material, Connection Type & Lightning Protection	Material : Y : Epoxy Polyester Powder Coated Hybrid Paint, Connection : 1/2" NPT & Lightning Protection : None	
H	Output/Protocol	Analogue Output : 4-20mA dc, Digital Protocol : Hart Protocol	
C	Customer Interface Selections	Indicator : Basic, Ext Zero, Span & Config Buttons : Yes, Languages : English	
1	Application Software	Standard Diagnostics	
1	Output Limit, Failsafe & Write Protect Settings	Write Protect : Disabled, Fail Mode : High> 21.0 mAdc, High & Low Output Limits ³ : Honeywell Std (3.8-20.8 mAdc)	
C	General Configuration	Custom Configuration (Unit Data Required from customer)	
B	Accuracy & Calibration	Accuracy : Standard, Calibrated Range : Custom (Unit Data Required), Calibration Qty : Single Calibration	
1	Mounting Bracket	Bracket Type : Angle Bracket, Material : Carbon Steel	
1	Customer Tag	One Wired Stainless Steel Tag (Up to 4 lines 26 Char/line)	
A0	Plugs & Adapters	No Conduit Plugs or Adapters Required	
F1	Certifications	Calibration Test Report & Certificate of Conformance (F3399)	
0000	Manufacturing Specials	Factory Identification	
P&S	Accessories	5Pin Plug & Socket connector	
DATA SHEET FOR PRESSURE TRANSMITTER		DOC No : DS-DPT-06	Rev : 00

Technical Information

STD800 SmartLine Differential Pressure
Specification 34-ST-03-82, Jan 2021**Introduction**

Part of the SmartLine® family of products, the STD800 is a high performance differential pressure transmitter featuring piezoresistive sensor technology. By combining differential pressure sensing with on chip static pressure and temperature compensation the STD800 offers high accuracy and stability over a wide range of application pressures and temperatures. The SmartLine family is also fully tested and compliant with Experion® PKS providing the highest level of compatibility assurance and integration capabilities. SmartLine easily meets the most demanding application needs for pressure measurement applications.

Best in Class Features:

- Accuracies up to 0.035% of span standard & 0.025% of span optional
- Stability up to 0.01% of URL per year for 15 years
- Automatic static pressure & temperature compensation
- Rangeability up to 400:1
- Response times as fast as 90ms
- Multiple local display capabilities
- External zero, span, & configuration capability
- Polarity insensitive electrical connections
- Comprehensive on-board diagnostic capabilities
- Integral Dual Seal design for highest safety based on ANSI/NFPA 70-202 and ANSI/ISA 12.27.0
- World class overpressure protection
- Full compliance to SIL 2/3 requirements.
- Modular design characteristics
- Available with additional 15-year warranty
- Plugged Impulse Line Detection Option
- Dual/Triple Calibration Option (HART & Fieldbus only)



Figure 1 – STD800 Differential Pressure Transmitters feature field-proven piezoresistive sensor technology

Communications/Output Options:

- 4-20mA dc
- Honeywell Digitally Enhanced (DE)
- HART® (version 7.0)
- FOUNDATION™ Fieldbus

All transmitters are available with the above listed communications protocols.

Span & Range Limits:

Model	URL “H ₂ O (mbar)”	LRL “H ₂ O (mbar)”	Min Span “H ₂ O (mbar)”
STD810	10 (25)	-10 (-25)	0.1 (0.25)
STD820	400 (1000)	-400 (-1000)	1.0 (2.5)
Model	psi (bar)	psi (bar)	psi (bar)
STD830	100 (7.0)	-100 (-7.0)	1 (0.07)
STD870	3000 (210)	-100 (-7.0)	30 (2.1)

Description

The SmartLine family of gauge pressure, differential pressure, and absolute pressure transmitters is designed around a high performance piezo-resistive sensor. This one sensor integrates multiple sensors linking process pressure measurement with on-board static pressure (DP Models) and temperature compensation measurements resulting in the best total performance available. This level of performance allows the ST 800 to replace virtually any competitive transmitter available today.

Unique Indication/Display Options

The ST 800 modular design accommodates a basic alphanumeric LCD display or a unique advanced graphics LCD display with many unparalleled features.

Basic Alphanumeric LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Configurable (HART only) and standard (Pa, KPa, MPa, KGcm², Torr, ATM, inH₂O, mH₂O, bar, mbar, inH₂O, inHG, FTH₂O, mmH₂O, mm HG, & psi) measurement units
- 2 Lines 16 Characters (4.13H x 1.83W mm)
- Square root output indication ($\sqrt{}$)

Advanced Graphics LCD Display Features

- Modular (may be added or removed in the field)
- 0, 90, 180, & 270 degree position adjustments
- Standard and custom measurement units available.
- Up to eight display screens with 3 formats are possible
- (Large PV with Bar Graph or PV with Trend Graph)
- Configurable screen rotation timing (1 to 30 sec)
- Display Square Root capabilities may be set separately from the 4-20mA dc output signal
- Unique "Health Watch" indication provides instant visibility of diagnostics
- Multiple language capability. (EN, DE, FR, IT, ES, RU, TR, CN & JP)

Diagnostics

SmartLine transmitters all offer digitally accessible diagnostics which aid in providing advanced warning of possible failure events minimizing unplanned shutdowns, providing **lower overall operational costs**

Configuration Tools

Integral Three Button Configuration Option

Suitable for all electrical and environmental requirements, SmartLine offer the ability to configure the transmitter and display via three externally accessible buttons when either display option is selected. Zero/span capabilities are also optionally available via these buttons with or without selection of a display option.

Hand Held Configuration

SmartLine transmitters feature two-way communication and configuration capability between the operator and the transmitter. All Honeywell transmitters are designed and tested for compliance with the offered communication protocols and are designed to operate with any Standards compliant handheld configuration device.

Personal Computer Configuration

Honeywell's SCT 3000 Configuration Toolkit provides an easy way to configure Digitally Enhanced (DE) instruments using a personal computer as the configuration interface. Field Device Manager (FDM) Software and FDM Express are also available for managing HART & Fieldbus device configurations.

System Integration

- SmartLine communications protocols all meet the most current published standards for HART/DE/Fieldbus.
- Integration with Honeywell's Experion PKS offers the following unique advantages.
 - Transmitter messaging
 - Maintenance mode indication
 - Tamper reporting
 - FDM Plant Area Views with Health summaries
 - All ST 800 units are Experion tested to provide the highest level of compatibility assurance

Modular Design

To help contain maintenance & inventory costs, all ST 800 transmitters are modular in design supporting the user's ability to replace meter bodies, add indicators or change electronic modules without affecting overall performance or approval body certifications. Each meter body is uniquely characterized to provide in-tolerance performance over a wide range of application variations in temperature and pressure and due to the Honeywell advanced interface, electronic modules may be swapped with any electronics module without losing in-tolerance performance characteristics.

Modular Features:

- Meter body replacement
- Exchange/replace electronics/comms modules*
- Add or remove integral indicators*
- Add or remove lightning protection (terminal connection)*

* Field replaceable in all electrical environments (including IS) except flameproof without violating agency approvals.

With no performance effects, Honeywell's unique modularity results in **lower inventory needs and lower overall operating costs.**

Plugged Impulse Line Detection:

STD800 models are offered with a PILD option which provides indication of a plugged impulse line or process connection. When used in conjunction with a basic or advanced display, a non-critical diagnostic indication appears on the integral display. For units without an integral display, an indication can be seen via the host or hand held device when HART Protocol is utilized.

Dual/Triple Calibration:

STD800 models are optionally offered with multiple calibrations. In lieu of a standard factory calibration, units can be supplied with 1, 2, or 3 customer specified calibrations. These calibrations are stored in the meter body and provide users with factory calibrated performance at up to three different calibrated ranges. This increases application flexibility without requiring any costly recalibration or additional inventory.

Performance Specifications

Reference Accuracy (conformance to +/-3 Sigma)

Table 1

Model	URL	LRL	Min Span	Maximum Turndown Ratio	Stability (% URL/ Yr for 15 years)	Reference Accuracy ^{1,2} (% Span) Std/Opt
STD810	10 in H ₂ O (25mbar)	-10 in H ₂ O (-25mbar)	0.1 in H ₂ O (0.25mbar)	100:1	0.015	0.035
STD820	400 in H ₂ O (1000mbar)	-400 in H ₂ O (-1000mbar)	1 in H ₂ O (2.5mbar)	400:1	0.010	0.0375 / 0.025
STD830	100 psi (7.0 bar)	-100 psi (-7.0 bar)	1 psi (0.07 bar)	100:1	0.020	0.0375 / 0.0325
STD870	3000 psi (210 bar)	-100 psi (-7.0 bar)	30 psi (2.1 bar)	100:1	0.010	0.0375 / 0.0350

Zero and span may be set anywhere within the listed (URL/LRL) range limits

Accuracy at Specified Span, Temperature and Static Pressure Effects: (conformance to +/-3)

Table 2

			Accuracy ^{1,2} (% of Span)				Combined Zero & Span temperature Effect (% Span / 28°C (50 °F))		Combined Zero & Span Static Line Pressure Effect ⁴ (% Span/1000psi) ³	
	Model	URL	Reference Turndown	A	B	C (see URL units)	D	E	F	G
Standard Accuracy	STD810	10 in H ₂ O (25mbar)	10:1	0.010	0.025	1 (2.5)	0.070	0.040	0.050	0.075
	STD820	400 in H ₂ O (1000mbar)	16:1	0.005	0.0325	25 (62.5)	0.025	0.007	0.080	0.007
	STD830	100 psi (7.0 bar)	6.7:1	0.005	0.0325	15 (1.05)	0.025	0.010	0.075	0.075
	STD870	3000 psi (210 bar)	15:1	0.005	0.0325	200 (14)	0.025	0.006	0.075	0.075
High Accuracy Option	STD820	400 in H ₂ O (1000mbar)	16:1	0.005	0.020	25 (62.5)	0.025	0.0107	0.080	0.007
	STD830	100 psi (7 bar)	6.7:1	0.005	0.0275	15 (1.05)	0.025	0.010	0.075	0.075
	STD870	3000 psi (210 bar)	15:1	0.005	0.030	200 (14)	0.025	0.006	0.075	0.075
			Turn Down Effect				Temp Effect		Static Effect	
			$\pm [A + B] \text{ if Span} \geq C$ $\pm \left[A + B \left(\frac{C}{Span} \right) \right] \text{ if Span} < C$				$\pm \left[D + E \left(\frac{URL}{Span} \right) \right]$		$\pm \left[F + G \left(\frac{URL}{Span} \right) \right]$	

$$\text{Total Performance} = \pm \sqrt{(\text{Accuracy})^2 + (\text{Temp Effect})^2 + (\text{Static Line Pressure Effect})^2}$$

Total Performance Examples: (standard accuracy 5:1 Turndown, up to 50 °F shift & up to 1000 psi Static Pressure³)

Model	Total Performance	Model	Total Performance
STD810 @ 2" H ₂ O	0.505% of span	STD830 @ 20 psi	0.140% of span
STD820 @ 80" H ₂ O	0.135% of span	STD870 @ 600 psi	0.131% of span

Typical Calibration Frequency: Calibration verification is recommended every four (4) years

Notes:

1. Terminal based Accuracy – Includes combined effects of linearity, hysteresis and repeatability. Analog output adds 0.005% of span
2. For zero based spans and reference conditions of 25 °C (77 °F). 0 psig static pressure. 10 to 55% RH, and 316 Stainless Steel barrier diaphragm.
3. STD810 includes only zero shift with static pressure. Results are % of span/25 psig.

Operating Conditions – All Models

Parameter	Reference Condition		Rated Condition		Operative Limits		Transportation and Storage	
	°C	°F	°C	°F	°C	°F	°C	°F
Ambient Temperature ¹ STD800	25±1	77±2	-40 to 85	-40 to 185	-40 to 85	-40 to 185	-55 to 120	-67 to 248
Meter Body Temperature ² STD810, 820, 830, 870	25±1	77±2	-40 to 110 ¹	-40 to 230 ¹	-40 to 125	-40 to 257	-55 to 120	-67 to 248
Humidity %RH	10 to 55		0 to 100		0 to 100		0 to 100	
Vac. Region – Min. Pressure All Models Except STD810 mmHg absolute inH ₂ O absolute	Atmospheric Atmospheric		25 13		2 (short term) ³ 1 (short term) ³			
Supply Voltage Load Resistance	10.8 to 42.4 Vdc at terminals (IS versions limited to 30 Vdc) 0 to 1,440 ohms (as shown in Figure 2)							
Maximum Allowable Working Pressure (MAWP) ^{4,5} (ST 800 products are rated to Maximum Allowable Working Pressure. MAWP depends on Approval Agency and transmitter materials of construction.)	Standard: STD810 = 50 psi (3.45 bar) STD820, STD830 and STD870 = 4,500 psi (310 bar) Optional: STD820, STD830, STD870 = 6,000 psi (420 bar) Static Pressure Limit = Maximum Allowable Working Pressure (MAWP) = Overpressure Limit for ST 800 Differential Pressure Transmitters							

¹ LCD Display operating temperature -20°C to +70°C. Storage temperature -30°C to 80°C.

² Silicone 704 minimum temperature rating is 0°C (32°F). CTFE minimum temperature rating is -30°C (-22°F).
NEOBEE M-20 minimum temperature rating is -15°C (5°F). NEOBEE® is a registered trademark of Stepan Company.

³ Short term equals 2 hours at 70°C (158°F).

⁴ MAWP applies for temperatures -40 to 125°C. Static Pressure Limit is de-rated to 3,000 psi for -26°C to -40°C. for all models except STD810. Use of graphite. o-rings de-rates transmitter to 3,625 psi. Use of 1/2" process adaptors with graphite o-rings de-rates transmitter to 3,000 psi.

⁵ Consult factory for MAWP of ST 800 transmitters with CRN approval.

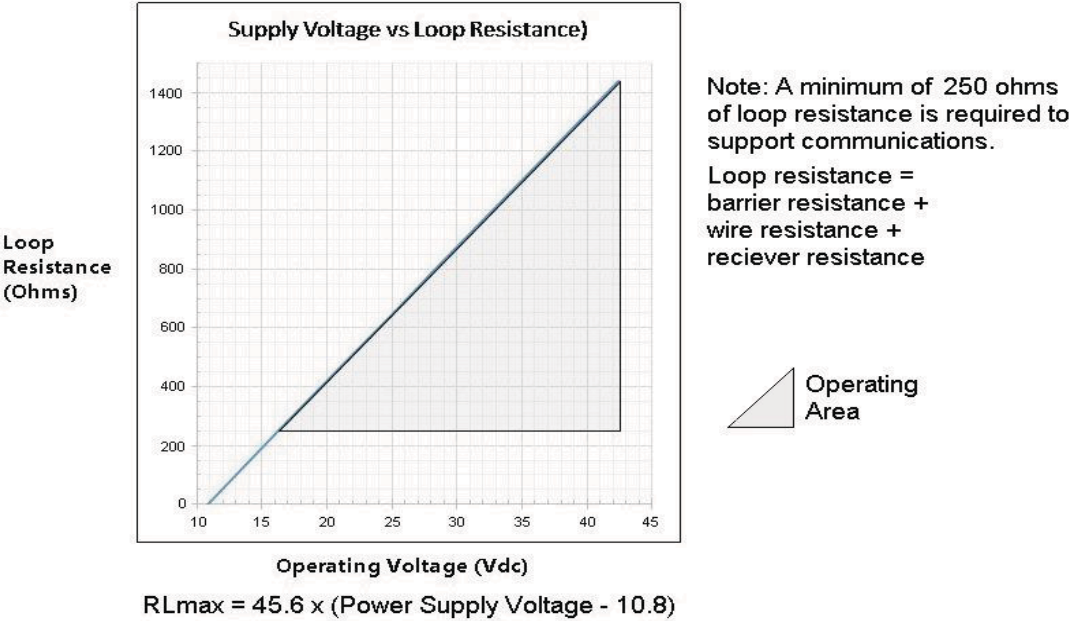


Figure 2 - Supply voltage and loop resistance chart & calculations

Performance Under Rated Conditions – All Models

Parameter	Description		
Analog Output	Two-wire, 4 to 20 mA (HART & DE Transmitters only)		
Digital Communications:	Honeywell DE, HART 7 protocol or FOUNDATION Fieldbus ITK 6.0.1 compliant All transmitters, irrespective of protocol have polarity insensitive connection.		
HART & DE Output Failure Modes (NAMUR for DE Units requires selecting display and configuration buttons or factory configuration)	Honeywell Standard: Compliance: Normal Limits: 3.8 – 20.8 mA Failure Mode: ≤ 3.6 mA and ≥ 21.0 mA 21.0 mA	NAMUR NE 43 3.8 – 20.5 ≤ 3.6 mA and ≥	
Supply Voltage Effect	0.005% span per volt.		
Transmitter Turn on Time (includes power up & test algorithms)	HART or DE: 2.5 sec.		

Materials Specifications (see model selection guide for availability/restrictions with various models)

Parameter	Description
Barrier Diaphragms Material	316L SS, Hastelloy® C-276 ² , Monel® 400 ³ , Tantalum, Gold-plated 316L SS, Gold-plated Hastelloy® C-276, Gold-plated Monel® 400
Process Head Material	316 SS ⁴ , Carbon Steel (Zinc-plated) ⁵ 316 SS ⁴ , Carbon Steel (Zinc-plated) ⁵ , Hastelloy C-276 ⁶ , Monel 400 ⁷
Vent/Drain Valves & Plugs ¹	316 SS ⁴ , Hastelloy C-276 ² , Monel 400 ⁷
Head Gaskets	Glass-filled PTFE standard. Viton® and graphite are optional.
Meter Body Bolting	Carbon Steel (Zinc plated) standard. Options include 316 SS, NACE A286 SS bolts, Monel K500, Super Duplex and B7M.
Optional Adapter Flange and Bolts	Adapter Flange materials include 316 SS, Hastelloy C-276 and Monel 400. Bolt material for flanges is dependent on process head bolts material chosen. Standard adaptor seal material is glass-filled PTFE. Viton and graphite are optional.
Mounting Bracket	Carbon Steel (Zinc-plated) or 304 Stainless Steel or 316 Stainless Steel
Fill Fluid	Silicone Oil 200, Silicone Oil 704, Inert Fluorinated Oil CTFE and NEOBEE® M-20 (Note that STD810 is only available with Silicone Oil 200 and NEOBEE® M-20)
Electronic Housing	Pure Polyester Powder Coated Low Copper (<0.4%)-Aluminum. Meets NEMA 4X, IP66, & P67. All stainless steel housing is optional.
Mounting	Can be mounted in virtually any position using the standard mounting bracket. Bracket is designed to mount on 2-inch (50 mm) vertical or horizontal pipe. See Figure 3.
Process Connections	1/4- NPT or 1/2- NPT with adapter (meets DIN requirements)
Wiring	Accepts up to 16 AWG (1.5 mm diameter).
Dimensions	See Figure 4.
Net Weight	8.3 pounds (3.8 Kg) with Aluminum Housing

¹ Vent/Drains are sealed with Teflon®² Hastelloy C-276 or UNS N10276³ Monel 400 or UNS N04400⁴ Supplied as 316 SS or as Grade CF8M, the casting equivalent of 316 SS.⁵ Carbon Steel heads are zinc-plated and not recommended for water service due to hydrogen migration. For that service, use 316 stainless steel wetted Process Heads.⁶ Hastelloy C-276 or UNS N10276. Supplied as indicated or as Grade CW12MW, the casting equivalent of Hastelloy C-276⁷ Monel 400 or UNS N04400. Supplied as indicated or as Grade M30C, the casting equivalent of Monel 400

Communications Protocols & Diagnostics

HART Protocol

Version:

HART 7

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Minimum Load: 0 ohms. (For handheld communications a minimum load of 250 ohms is required)

Foundation Fieldbus (FF)

Power Supply Requirements

Voltage: 9.0 to 32.0Vdc at terminals

Steady State Current: 17.6mA_{dc}

Software Download Current: 27.4mA_{dc}

Available Function Blocks

Block Type	Qty	Execution Time
Resource	1	n/a
Transducer	1	n/a
Diagnostic	1	n/a
Analog Input	1*	30 ms
PID w/Autotune	1	45 ms
Integrator	1	30 ms
Signal Char (SC)	1	30 ms
LCD Display	1	n/a
Flow Block	1	30 ms
Input Selector	1	30 ms
Arithmetic	1	30 ms

* AI block may have two (2) additional instantiations.

All available function blocks adhere to FOUNDATION Fieldbus standards. PID blocks support ideal & robust PID algorithms with full implementation of Auto-tuning.

Link Active Scheduler

Transmitters can perform as a backup Link Active Scheduler and take over when the host is disconnected. Acting as a LAS, the device ensures scheduled data transfers typically used for the regular, cyclic transfer of control loop data between devices on the Fieldbus.

Number of Devices/Segment

Entity IS model: 6 devices/segment

Schedule Entries

18 maximum schedule entries

Number of VCR's: 24 max

Compliance Testing: Tested according to ITK 6.0.1

Software Download

Utilizes Class-3 of the Common Software Download procedure as per FF-883 which allows the field devices of any manufacturer to receive software upgrades from any host.

Honeywell Digitally Enhanced (DE)

DE is a Honeywell proprietary protocol which provides digital communications between Honeywell DE enabled field devices and Hosts.

Power Supply

Voltage: 10.8 to 42.4Vdc at terminals

Load: Maximum 1440 ohms See figure 2

Standard Diagnostics

ST 800 top level diagnostics are reported as either critical or non-critical and readable via the DD/DTM tools or integral display as shown below.

Critical Diagnostics		
HART DD/DTM tools	Advanced Display	Basic Display
Electronic Module DAC Failure	Electronics Module fault	Electronics Module fault
Meter Body NVM Corrupt	Meterbody fault	Meterbody fault
Config Data Corrupt	Electronics Module fault	Electronics Module fault
Electronic Module Diag Failure	Electronics Module fault	Electronics Module fault
Meter Body Critical Failure	Meterbody fault	Meterbody fault
Sensor Comm Timeout	Meterbody Comm fault	Meterbody Comm fault

Non-Critical Diagnostics		
HART DD/DTM tools	Advanced Display	Basic Display
Display Failure	n/a	n/a
Electronic Module Comm Failure	n/a	n/a
Meter Body Excess Correct	Zero Correct (OK or EXCESSIVE) Span Correct (OK or EXCESSIVE)	n/a
Sensor Over Temperature	Meterbody Temp (OK, OVER TEMP)	n/a
Fixed Current Mode	Analog Out mode (Fixed or Normal)	n/a
PV Out of Range	Primary PV (OK or OVERLOAD)	n/a
No Factory Calibration	Factory Cal (OK, NO FACTORY CAL)	n/a
No DAC Compensation	DAC Temp Comp (OK, NO COMPENSATION)	n/a
LRV Set Error – Zero Config Button	n/a	n/a
URV Set Error – Span Config Button	n/a	n/a
AO Out of Range	n/a	n/a
Loop Current Noise	n/a	n/a
Meter Body Unreliable Comm	Meterbody Comm (OK, SUSPECT)	n/a
Tamper Alarm	n/a	n/a
No DAC Calibration	n/a	n/a
Sensor Supply Voltage Low	Supply Voltage (OK, LOW, or HIGH)	n/a

Refer to ST 800 diagnostics tech note for additional level diagnostics.

Other Certification Options

Materials

- NACE MRO175, MRO103, ISO15156

Hazardous Areal Certifications:

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
A	FM Approvals™ USA	Explosionproof: Class I, Division 1, Groups A, B, C, D; Dust Ignition Proof: Class II, III, Division 1, Groups E, F, G; T6..T5 Class I, Zone 0/1, AEx db IIC T6..T5 Ga/Gb Class II, Zone 21, AEx tb IIIC T95° Db	All	Note 1	T5: -50 °C to 85°C T6: -50 °C to 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D, E, F, G: T4 Class I, Zone 0, AEx ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50 °C to 70°C
			Foundation Fieldbus	Note 2b	-50 °C to 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D locations, T4 Class I, Zone 2, AEx nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50 °C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-
		STANDARDS: FM Class 3600:2011; FM Class 3610: 2010; FM Class 3611: 2004; FM Class 3615: 2006; FM Class 3616: 2011; FM Class 3810: 2005; ANSI/ISA 60079-0: 2013; ANSI/UL 60079-1: 2015; ANSI/UL 60079-11: 2014; ANSI/ISA 60079-15: 2012; ANSI/UL 60079-26: 2017; ANSI/UL 60079-31: 2015; ANSI/NEMA 250: 2003; ANSI/ IEC 60529: 2004			
B	Canadian Standards Association (CSA) USA and Canada	Explosion Proof: Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T6..T5 Class I Zone 1 AEx db IIC T6..T5 Ga/Gb Ex db IIC T6..T5 Ga/Gb Zone 22 AEx tb IIIC T95° Db Ex tb IIIC T95° Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Class I, II, III, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1, T4 Class I Zone 0, AEx ia IIC T4 Ga Class I Zone 2, AEx ic IIC T4 Gc Ex ia IIC T4 Ga Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Nonincendive: Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F, G; Class III, Division 2, T4 Class I Zone 2 AEx nA IIC T4 Gc Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C to 85°C
		Enclosure: Type 4X/ IP66/ IP67	All	All	-

MSG CODE	AGENCY	TYPE OF PROTECTION	COMM. OPTION	ELECTRICAL PARAMETERS	AMBIENT TEMP (Ta)
		STANDARDS: CSA C22.2 No. 0-10; CSA C22.2 No. 94-M91; CSA C22.2 No. 25-1966; CSA C22.2 No. 30-M1986; CSA C22.2 No. 142-M1987; CSA C22.2 No. 157-92; CSA C22.2 No. 213-M1987; CSA-C22.2 No. 60529:05; CSA-C22.2 No. 60079-0:11; CSA-C22.2 No. 60079-1:11; CSA-C22.2 No. 60079-11:11; CSA-C22.2 No. 60079-15:12; CSA-C22.2 No. 60079-31:12; ISA 12.12.01-2010; ISA 60079-0: 2009; ISA 60079-11: 2011; ISA 60079-15: 2009; ISA 60079-26: 2008; ISA-60079-27:2007 (12.02.04)-2006 (R2011); UL 913 Ed. 6; UL 916:1998; ANSI/ISA-12.27.01-2011			
C	ATEX	Flameproof: SIRA 12ATEX2233X II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: SIRA 12ATEX2233X II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: SIRA 12ATEX4234X II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: SIRA 12ATEX4234X II 3 G Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) II 3 G Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: EN 60079-0: 2012/A11: 2013; EN 60079-1: 2014; EN 60079-7: 2015; EN 60079-11: 2012; EN 60079-26: 2015; EN 60079-31: 2009			
D	IECEx World	Flameproof: IECEx SIR 12.0100X Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: IECEx SIR 12.0100X Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: IECEx SIR 12.0100X Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: IECEx SIR 12.0100X Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
		STANDARDS: IEC 60079-0: 2011; IEC 60079-1: 2014; IEC 60079-7: 2017; IEC 60079-11: 2011; IEC 60079-26: 2014; IEC 60079-31: 2013			

E	SAEx South Africa	Flameproof : Ex d IIC T6...T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC Ga T4 FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
F	INMETRO Brazil	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2a	-50°C TO 70°C
			Foundation Fieldbus	Note 2b	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-
G	NEPSI CHINA	Flameproof: Ex db IIC T6..T5 Ga/Gb Ex tb IIIC T 95°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Increase Safety: II 3 G Ex ec IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ex ic IIC T4 Gc FISCO Field Device (Only for FF Option) Ex ic IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	-

H	KOSHA Korea	Flameproof : Ex d IIC T4, T5, T6 Ex tD A21 IP66/IP67 T95°C...T120 °C	All	Note 1	T4: -50°C TO 85°C T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4	4-20 mA / DE/ HART	Note 2	Ta= -50 °C to 70°C
			Foundation Fieldbus	Note 2	Ta= -50 °C to 70°C
		Enclosure: IP66/ IP67	All	All	-
I	EAC Russia, Belarus and Kazakhstan	Flameproof: Ga/Gb Ex d IIC T6..T5 Ex tb IIIC Db T 85°C	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ga Ex ia IIC T4 X FISCO Field Device (Only for FF Option) Ga Ex ia IIC T4 X	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Zone 2, Non Sparking: 2 Ex nA IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Zone 2, Intrinsically Safe: Ga Ex ic IIC T4 X FISCO Field Device (Only for FF Option) 2 Ex ic IIC T4 Gc X	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 2	-50°C TO 85°C
		Enclosure : IP 66/67	All	All	
J	CCoE INDIA	Flameproof: Ex d IIC T6..T5 Ga/Gb	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) Ex ia IIC T4 Ga; Ex ic IIC T4 Gc	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Non Sparking Ex nA IIC T4 Gc	4-20 mA / DE/ HART/ Foundation Fieldbus	Note 1	-50°C TO 85°C
		Enclosure: IP66/ IP67	All	All	-
K	UATR UKRAINE	Flameproof: II 1/2 G Ex db IIC T6..T5 Ga/Gb II 2 D Ex tb IIIC T95°C...T120°C Db	All	Note 1	T5: -50°C TO 85°C T6: -50°C TO 65°C
		Intrinsically Safe: II 1 G Ex ia IIC T4 Ga FISCO Field Device (Only for FF Option) II 1 G Ex ia IIC T4 Ga	4-20 mA / DE/ HART	Note 2	-50°C TO 70°C
			Foundation Fieldbus	Note 2	-50°C TO 70°C
		Enclosure: IP66/ IP67	All	All	-

Notes:

1. Operating Parameters:

Voltage= 11 to 42 V DC

= 10 to 30 V (FF)

Current= 4-20 mA Normal

= 30 mA (FF)

2. Intrinsically Safe Entity Parameters

a. Analog/ DE/ HART Entity Values:

Vmax= Ui = 30V Imax= li= 105mA Ci = 4.2nF Li =984 uH Pi =0.9W

Transmitter with Terminal Block Revision E or Later

Vmax= Ui = 30V Imax= li= 225mA Ci = 4.2nF Li = 0 Pi =0.9W

Note : Transmitter with Terminal Block Revision E or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-001 or 50049839-002
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

b. Foundation Fieldbus- Entity Values

Vmax= Ui = 30V Imax= li= 180mA Ci = 0nF Li = 984 uH Pi =1W

Transmitter with Terminal Block Revision F or Later)

Vmax= Ui = 30V Imax= li= 225mA Ci =0nF Li = 0 Pi =1 W

FISCO Field Device

Vmax= Ui = 17.5V Imax= li= 380 mA Ci = 0nF Li = 0 Pi =5.32 W

Note : Transmitter with Terminal Block Revision F or later

The revision is on the label that is on the module. There will be two lines of text on the label:

- First is the Module Part #: 50049839-003 or 50049839-004
- Second line has the supplier information, along with the REVISION:
XXXXXX-EXXX, THE "X" is production related, THE POSITION of the "E" IS THE REVISION.

Approval Certifications:

Marine Certificates	This certificate defines the certifications covered for the ST 800 Pressure Transmitter family of products, including the SMV 800 Smart Multivariable Transmitter. It represents the compilation of the five certificates Honeywell currently has covering the certification of these products into marine applications.	
	For ST 800 Smart Pressure Transmitter and SMV800 Smart Multivariable Transmitter	
	American Bureau of Shipping (ABS) - 2009 Steel Vessel Rules 1-1-4/3.7, 4-6-2/5.15, 4-8-3/13 & 13.5, 4-8-4/27.5.1, 4-9-7/13. Certificate number: 04-HS417416-PDA	
	Bureau Veritas (BV) - Product Code: 389:1H. Certificate number: 12660/B0 BV	
	Det Norske Veritas (DNV) - Location Classes: Temperature D, Humidity B, Vibration A, EMC B, Enclosure C. For salt spray exposure; enclosure of 316 SST or 2-part epoxy protection with 316 SST bolts to be applied. Certificate number: A-11476	
	Korean Register of Shipping (KR) - Certificate number: LOX17743-AE001	
SIL 2/3 Certification	Lloyd's Register (LR) - Certificate number: 02/60001(E1) & (E2)	
	IEC 61508 SIL 2 for non-redundant use and SIL 3 for redundant use according to EXIDA and TÜV Nord Sys Tec GmbH & Co. KG under the following standards: IEC61508-1: 2010; IEC 61508-2: 2010; IEC61508-3: 2010.	
MEASUREMENT INSTRUMENTS DIRECTIVE (MID) 2004/ 22/ EC	Certificate Issued by NMI Certin B.V.	
	Mechanical Class: M3 Electromagnetic Environment: E3	
	Ambient Temperature Range: -25 °C to + 55 °C	
	Unit	Custom Calibration
	STD820	0 to 1000 mBar
	STD830	0 to 7 Bar
	STA84L	0 to 35 Bar A
	STG84L	0 to 35 Bar
	STD870	0 to 100 Bar
	STA87L	0 to 100 Bar A
	STG87L	0 to 100 Bar

Mounting & Dimensional Drawings

Mounting Configurations

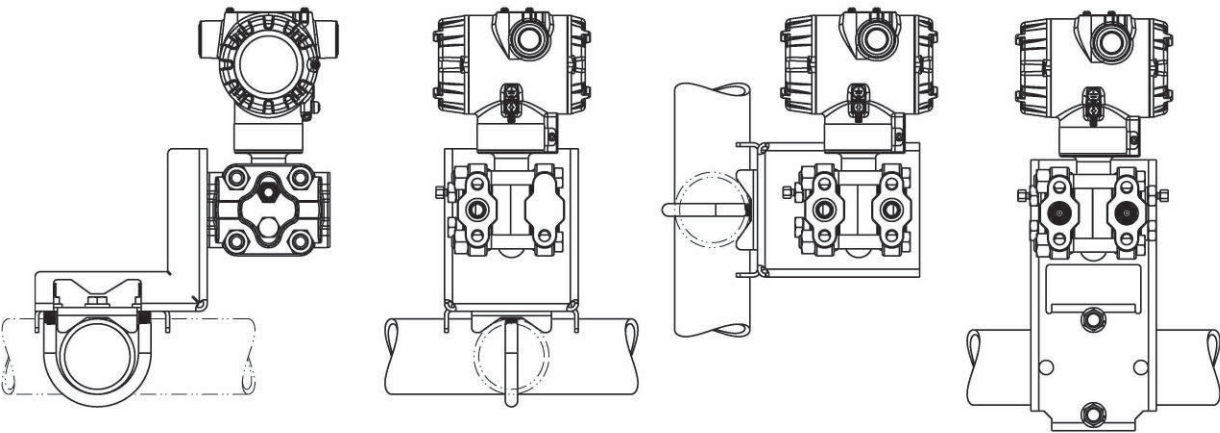


Figure 3 – Typical mounting configurations for STD810, STD820, STD830 and STD870 for reference

Reference Dimensions: $\frac{\text{millimeters}}{\text{inches}}$

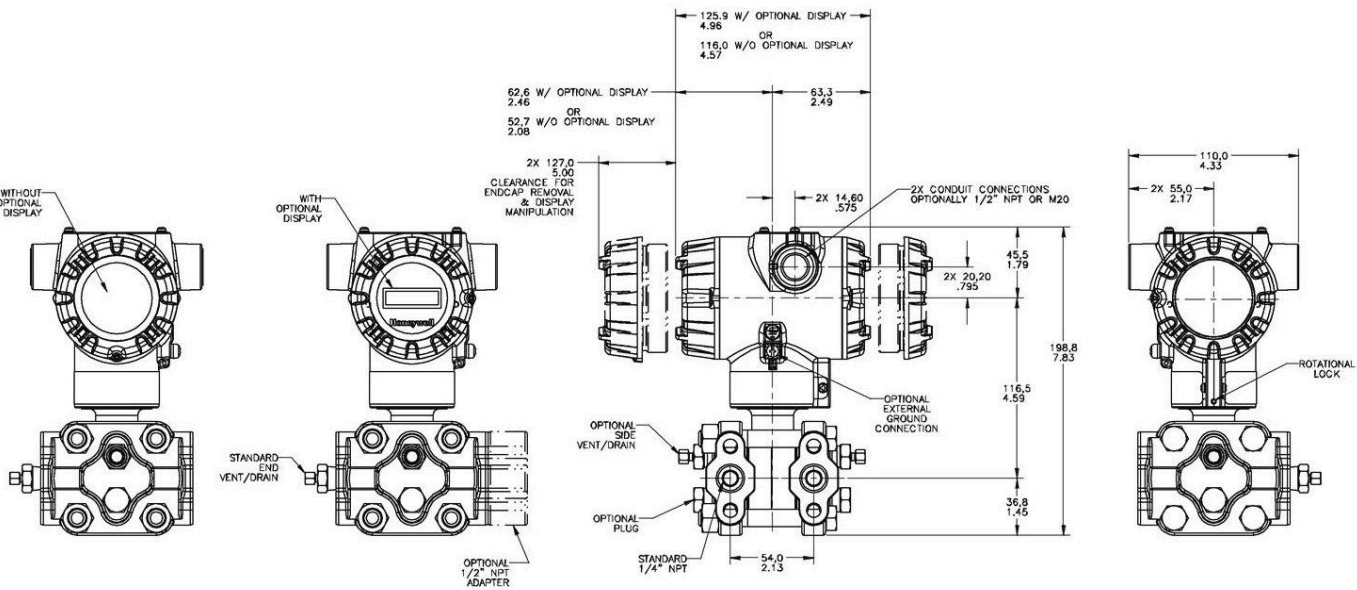


Figure 4 – Typical mounting dimensions of STD810, STD820, STD830 & STD870 for reference

Model Selection Guide

Model Selection Guides are subject to change and are inserted into the specifications as guidance only.

Model STD800 Differential Pressure Transmitter

Model Selection Guide:
34-ST-16-82 Issue 25

Instructions: Make selections from all Tables Key through XIII using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.

Key I II III IV V VI VII VIII (Optional) IX
 [STD] - [] - [] - [] - [] - [] - [] - [] - [] - [] - [0 0 0]

KEY NUMBER	URL	LRL	Max Span	Min Span	Units
Measurement Range	10 (25.0)	-10 (-25.0)	10 (25)	0.1 (0.25)	" H ₂ O (mbar)
	400/(1000)	-400/(-1000)	400/(1000)	1.0 (2.5)	" H ₂ O (mbar)
	100 (7.0)	-100 (-7.0)	100 (7.0)	1 (0.07)	psi (bar)
	3000 (210)	-100 (-7.0)	3000 (210)	30 (2.1)	psi (bar)

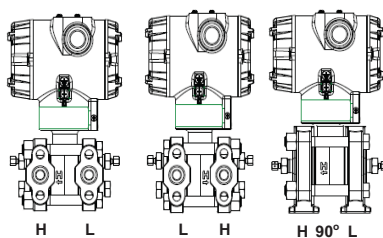
Selection	Availability			
STD810	↓			
STD820		↓		
STD830			↓	
STD870				↓

TABLE I	METER BODY SELECTIONS			
a. Process Wetted Heads & Diaphragm Materials	Process Head Material		Diaphragm Material	
	Plated Carbon Steel		316L Stainless Steel	
			Hastelloy® C-276	
			Monel® 400	
			Tantalum	
			Gold Plated Stainless Steel	
316 Stainless Steel		Gold Plated Hastelloy C-276		
		Gold Plated Monel 400		
		316L Stainless Steel		
		Hastelloy C-276		
		Monel 400		
Hastelloy C-276		Tantalum		
		Gold Plated Hastelloy C-276		
		Monel 400		
Monel 400		Monel 400		
		Gold Plated Monel 400		
b. Fill Fluid	Silicone Oil 200 Fluorinated Oil CTFE Silicone Oil 704 NEOBEE™ M-20			
c. Process Connection	None 1/2" NPT female	None (1/4" NPTF female thread Std) Materials to Match Head & Head Bolt Materials Selections ¹		
d. Bolt/Nut Materials	Carbon Steel 316 SS Grade 660 (NACE A286) with NACE 304 SS Nuts Grade 660 (NACE A286) Bolts & Nuts Monel K500 Super Duplex B7M			
e. Vent/Drain Type/Location	Head Type	Vent Type	Location	Vent Material
	Single Ended	None	None	None
	Single Ended	Standard Vent	Side	Matches Head Material ¹
	Single Ended	Center Vent	Side	Stainless Steel Only
	Dual Ended	Standard Vent	End	Matches Head Material ¹
	Dual Ended	Center Vent	End	Stainless Steel Only
	Dual Ended	Std Vent/Plug	Side/End	Matches Head Material ¹
f. Gasket Material	Teflon® or PTFE (Glass Filled) Viton® or Fluorocarbon Elastomer Graphite			
g. Static Pressure	Standard Static Pressure - 4500 psig (310 bar) except STD810: 50 psi (3.5 bar) High Pressure 6000 psi (415 bar)			

A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D		a	a	a
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H		a	a	a
4	*	*	*	*
5	*	*	*	*
6	*	*	*	*
J	*	*	*	*
K		a	a	a
7	*	*	*	*
L		a	a	a
8		a	a	a
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
4	*	*	*	*
A	*	*	*	*
H	*	*	*	*
C	*	*	*	*
S	*	*	*	*
N	*	*	*	*
K	p	p	p	p
M	p	p	p	p
D	p	p	p	p
B	*	*	*	*

1	*	*	*	*
2	*	*	*	*
3	t	t	t	t
4	*	*	*	*
5	t	t	t	t
6	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
S	*	*	*	*
H	k	k	k	k

¹Except Carbon Steel Heads shall use 316SS Vent/Drain, Plugs & Adapters when required



STD870
STD830
STD820
STD810

TABLE II	Meter Body & Connection Orientation	
Head/Connect Orientation	Standard	High Side Left, Low Side Right ² / Std Head Orientation
	Reversed	Low Side Left, High Side Right ² / Std Head Orientation
	90/Standard	High Side Left, Low Side Right ² / 90° Head Rotation

1	*	*	*	*
2	*	*	*	*
3	h	h	h	h

TABLE III	Agency Approvals (see data sheet for Approval Code Details)
Approvals	No Approvals Required
	FM Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	CSA Explosion proof, Intrinsically Safe, Non-incendive, & Dustproof
	ATEX Explosion proof, Intrinsically Safe & Non-incendive
	IECEX Explosion proof, Intrinsically Safe & Non-incendive
	SAEx Explosion proof, Intrinsically Safe & Non-incendive
	INMETRO Explosion proof, Intrinsically Safe & Non-incendive
	NEPSI Explosion proof, Intrinsically Safe & Non-incendive
	KOSHA Explosion proof, Intrinsically Safe & Non-incendive
	EAC Customs Union(Russia,Belarus,Kazakhstan)Ex Approval, Flame proof, Intrinsically Safe
	CCoE Explosion proof, Intrinsically Safe & Non-incendive
	UATR Flameproof, Intrinsically Safe & Dustproof

0	*	*	*	*
A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E	*	*	*	*
F	*	*	*	*
G	*	*	*	*
H	*	*	*	*
I	*	*	*	*
J	*	*	*	*
K	*	*	*	*

TABLE IV	TRANSMITTER ELECTRONICS SELECTIONS		
a. Electronic Housing Material & Connection Type	Material	Connection	Lightning Protection
	Polyester Powder Coated Aluminum	1/2 NPT	None
	Polyester Powder Coated Aluminum	M20	None
	Polyester Powder Coated Aluminum	1/2 NPT	Yes
	Polyester Powder Coated Aluminum	M20	Yes
	316 Stainless Steel (Grade CF8M)	1/2 NPT	None
	316 Stainless Steel (Grade CF8M)	M20	None
	316 Stainless Steel (Grade CF8M)	1/2 NPT	Yes
b. Output/ Protocol	Analog Output		Digital Protocol
	4-20mA dc		HART Protocol
	4-20mA dc		DE Protocol
	none		Foundation Fieldbus
c. Customer Interface Selections	Indicator	Ext Zero, Span & Config Buttons	Languages
	None	None	None
	None	Yes (Zero/Span Only)	None
	Basic	None	English
	Basic	Yes	English
	Advanced	None	EN, GE, FR, IT, SP, RU, TU
	Advanced	Yes	EN, GR, FR, IT, SP, RU, TU
	Advanced	None	EN, CH, JP
	Advanced	Yes	EN, CH, JP

A__	*	*	*	*
B__	*	*	*	*
C__	*	*	*	*
D__	*	*	*	*
E__	*	*	*	*
F__	*	*	*	*
G__	*	*	*	*
H__	*	*	*	*

H	*	*	*	*
D	u	u	u	u
F	*	*	*	*

_0	*	*	*	*
_A	f	f	f	f
_B	*	*	*	*
_C	*	*	*	*
_D	*	*	*	*
_E	*	*	*	*
_H	*	*	*	*
_J	*	*	*	*

TABLE V	CONFIGURATION SELECTIONS		
a. Application Software	Diagnostics		
	Standard Diagnostics		
	Advanced Diagnostics (Above with Plugged Impulse Detection PILD)		
b. Output Limit, Failsafe & Write Protect Settings	Write Protect	Fail Mode	High & Low Output Limits ³
	Disabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Disabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	High> 21.0mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	Low< 3.6mAdc	Honeywell Std (3.8 - 20.8 mAdc)
	Enabled	N/A	N/A Fieldbus or Profibus
	Disabled	N/A	N/A Fieldbus or Profibus
c. General Configuration	Factory Standard		
	Custom Configuration (Unit Data Required from customer)		

1__	*	*	*	*
2__	*	*	*	*

1	f	f	f	f
2	f	f	f	f
3	f	f	f	f
4	f	f	f	f
5	g	g	g	g
6	g	g	g	g
_S	*	*	*	*
_C	*	*	*	*

² Left side/Right side as viewed from the customer connection perspective

³ NAMUR Output Limits 3.8 - 20.5mAdc can be configured by the customer or select custom configuration Table Vc

STD870
STD830
STD820
STD810

TABLE VI	CALIBRATION & ACCURACY SELECTIONS		
	Accuracy	Calibrated Range	Calibration Qty
a. Accuracy and Calibration	Standard	Factory Std	Single Calibration
	Standard	Custom (Unit Data Required)	Single Calibration
	Standard	Custom (Unit Data Required)	Dual Calibration
	Standard	Custom (Unit Data Required)	Triple Calibration
	High Accuracy	Factory Std	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Single Calibration
	High Accuracy	Custom (Unit Data Required)	Dual Calibration
	High Accuracy	Custom (Unit Data Required)	Triple Calibration

A	*	*	*	*
B	*	*	*	*
C	*	*	*	*
D	*	*	*	*
E		s	s	s
F		s	s	s
G		s	s	s
H		s	s	s

TABLE VII	ACCESSORY SELECTIONS	
	Bracket Type	Material
a. Mounting Bracket	None	None
	Angle Bracket	Carbon Steel
	Angle Bracket	304 SS
	Angle Bracket	316 SS
	Marine Approved Bracket	Carbon Steel
	Marine Approved Bracket	304 SS
	Flat Bracket	Carbon Steel
	Flat Bracket	304 SS
	Flat Bracket	316 SS
b. Customer Tag	Customer Tag Type	
	No customer tag	
	One Wired Stainless Steel Tag (Up to 4 lines 26 char/line)	
c. Unassembled Conduit Plugs & Adapters	Unassembled Conduit Plugs & Adapters	
	No Conduit Plugs or Adapters Required	
	1/2 NPT Male to 3/4 NPT Female 316 SS Certified Conduit Adapter	
	1/2 NPT 316 SS Certified Conduit Plug	
	M20 316 SS Certified Conduit Plug	
	Minifast® 4 pin (1/2 NPT) (not suitable for X-Proof applications)	
	Minifast® 4 pin (M20) (not suitable for X-Proof applications)	

0	---	*	*	*	*
1	---	*	*	*	*
2	---	*	*	*	*
3	---	*	*	*	*
8	---	*	*	*	*
4	---	*	*	*	*
5	---	*	*	*	*
6	---	*	*	*	*
7	---	*	*	*	*

_0	---	*	*	*	*
_1	---	*	*	*	*
_2	---	*	*	*	*

__A0	*	*	*	*
__A2	n	n	n	n
__A6	n	n	n	n
__A7	m	m	m	m
__A8	n	n	n	n
__A9	m	m	m	m

TABLE VIII	OTHER Certifications & Options: (String in sequence comma delimited (XX, XX, XX,...))
Certifications & Warranty	None - No additional options
	Low Temperature Rating (-50 deg C min. ambient operative temperature limit)
	NACE MR0175; MR0103; ISO15156 (FC33338) Process wetted parts only
	NACE MR0175; MR0103; ISO15156 (FC33339) Process wetted and non-wetted parts
	Marine (DNV, ABS, BV, KR, LR)
	EN10204 Type 3.1 Material Traceability (FC33341)
	Certificate of Conformance (F3391)
	Calibration Test Report & Certificate of Conformance (F3399)
	Certificate of Origin (F0195)
	FMEDA (SIL 2/3) Certification (FC33337)
	Over-Pressure Leak Test Certificate (1.5X MAWP) (F3392)
	Cert Clean for O ₂ or CL ₂ service per ASTM G93
	PMI Certification ¹
	Extended Warranty Additional 1 year
	Extended Warranty Additional 2 years
	Extended Warranty Additional 3 years
	Extended Warranty Additional 4 years
	Extended Warranty Additional 15 years

00	*	*	*	*
LT	w	w	w	*
FG	*	*	*	*
F7	c	c	c	c
MT	d	d	d	d
FX	*	*	*	*
F3	*	*	*	*
F1	*	*	*	*
F5	*	*	*	*
FE	j	j	j	j
TP	*	*	*	*
OX	e	e	e	e
PM	*	*	*	*
01	*	*	*	*
02	*	*	*	*
03	*	*	*	*
04	*	*	*	*
15	*	*	*	*

TABLE IX	Manufacturing Specials
Factory	Factory Identification

0000	*	*	*	*
------	---	---	---	---

MODEL RESTRICTIONS

Restriction	Available Only with		Not Available with	
Letter	Table	Selection(s)	Table	Selection(s)
a			VIII	F7, FG
k			Ia	J,K,7,L,8
			Ic	H
			Id	B,D,M,N,S
			Ie	1, 2, 3, 5, 6
			III	B- No CRN number available
			If	C
c	1d	N,K,D,B	Ia	D,H,K,L,8
d	IVa	C, D, G, H	VIIa	1,2,3,5,6,7
e	Ib	2		
f			IVb	F
g			IVb	H, D
h			Ie	4, 5, 6
			VIIa	1,2,3,4,5,6,7,8
j	IVb	H	Vb	1,2,6
m	IVa	B, D, F, H		
n	IVa	A, C, E, G		
p			III	B- No CRN number available
t			Ia	J, K, 7, L, 8
s	Ia	A,E		
u			Va	2
			VIIa	C,D,G,H
v	IVa	C, D, G, H	IVb	D,F
w	Ib	1	VIII	FE
b	Select only one option from this group			

¹The PM option is available on all Smartline Pressure Transmitter process wetted parts such as process heads, flanges, bushings and vent plugs except plated carbon steel process heads and flanges. PM option information is also available on diaphragms except Gold plated and STG and STA in-line construction pressure transmitters.

FIELD INSTALLABLE REPLACEMENT PARTS

Description	Kit Number
Integrally Mounted Basic Indicator Kit (Compatible with all Electronic Modules)	50049911-501
Integrally Mounted Advanced Indicator Kit (compatible with all Electronic Modules)	50049846-501
Terminal Strip w/o Lightning Protection for HART or DE Modules	50075472-531
Terminal Strip w/Lightning Protection Kit for HART or DE Modules	50075472-532
Terminal Strip w/o Lightning Protection FFB/Profibus Module	50075472-533
Terminal Strip w/Lightning Protection Kit for FFB/Profibus Module	50075472-534
HART Electronics Module	50049849-501
HART Electronics Module w/connection for external configuration buttons	50049849-502
DE Electronics Module	50049849-503
DE Electronics Module w/connection for external configuration buttons	50049849-504
FFB Electronics Module Kit	50049849-507
FFB Electronics Module w/connection for external configuration buttons	50049849-508

PRODUCT MANUALS

Description	Part Number
ST 800 Smart Transmitter User Manual - English	34-ST-25-35
ST 800 Smart Transmitter HART/DE Communications Manual - English	34-ST-25-38
ST 800 Smart Transmitter Safety Manual - English	34-ST-25-37
ST 800 Smart Transmitter Foundation Fieldbus Manual - English	34-ST-25-39
ST 800 Smart Transmitter Function Block Manual - English	34-ST-25-42

All product documentation is available at www.honeywellprocess.com.

Sales and Service

For application assistance, current specifications, ordering, pricing, and name of the nearest Authorized Distributor, contact one of the offices below.

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FAX: +(61) 7-3840 6481
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(TAC)

hfs-tac-support@honeywell.com

Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

AMERICAS

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Phone: (TAC) (800) 423-9883
or (215) 641-3610
(Sales) 1-800-343-0228

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FP-Sales-Apps@Honeywell.com

or

(TAC)

hfs-tac-support@honeywell.com

Web

Knowledge Base search
engine <http://bit.ly/2N5Vldi>

Specifications are subject to change without notice.

For more information

To learn more about SmartLine Pressure
Transmitters, visit www.honeywellprocess.com
Or contact your Honeywell Account Manager

Process Solutions

Honeywell
1250 W Sam Houston Pkwy S
Houston, TX 77042

Honeywell Control Systems Ltd
Honeywell House, Skimped Hill Lane
Bracknell, England, RG12 1EB

Shanghai City Centre, 100 Jungi Road
Shanghai, China 20061

www.honeywellprocess.com



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PRESSURE GAUGE

TECHNICAL DATA SHEET FOR PRESSURE GAUGE

Sr.	ITEM	DESCRIPTION
1	Manufacturer	Gauge Bourdon India Pvt. Ltd., Panvel
2	Type	Bourdon sensing Pressure Gauge
3	Model No.	BSPG-V-150-S4S-S6S-S6S-S4S-T15NTM-(0-6)-KSC-L
4	Quantity	2 No.s
5	Dial Size	150 mm, Aluminium,white background with black marking
6	Location	Discharge & suction of UAF Pump
7	Case & Bezel	SS 304, Bayonet type Bezel, weatherproof to IP-68 as per IEC:60529
8	Windows	Shatterproof Glass
9	Bourdon	SS 316 Seamless
10	Socket	SS 316
11	Movement	SS 304
12	Range	1.5- 3 kg/cm ² (Operating pressure Range) & 0- 6 kg/cm ² (Instrument pressure Range)
13	Scale	Linear
14	Connection	1/2 " NPT (M)
15	Accuracy	±1% F.S.D
16	Over Range	130% F.S.D
17	Zero Reset	Provided (Micrometer Pointer)
18	Blow out Disc	Provided (Neoprene) on top of case
19	Tag Plate	SS Tag Plate provided

Bourdon Sensing Pressure Gauges

General

MODEL : BSPG (Dry Case)

LFBSPG (Liquid Filled Case)

Features

- Compliance to latest EN-837 standard
 - Range : (-)1 to 1600 kg/cm²
 - Bourdon in SS316 Ti as standard providing better mechanical properties guaranteeing repeatability and accuracy
 - Accuracy $\pm 1\%$ FSD (Standard), $\pm 0.5\%$ FSD on request
 - Unit of measurement - kg/cm², bar, psi, kPa, MPa
-
- Pressure Gauges intended for Process Industries such as Chemicals, Petro-chemicals, Energy or Gas industry, Food processing, Nuclear etc.
 - These pressure gauges have been designed to satisfy requirements to operate in aggressive environment.



Specifications

Ref. Standard	EN-837
Dial	100 mm / 150 mm in Aluminium, white background, black markings
Case	SS304 / SS316 with bayonet bezel Phenol with screwed bezel
Protection	IP-68 (IS:13947 part I / IEC:60529)
Window	Safety glass (Shatter proof / Toughened glass)
Bourdon	SS316, SS316 Ti, SS316L, Monel
Socket	22mm Square in SS316, SS316 Ti, SS316L, Monel
Movement	SS304, SS316
Range	As per EN 837 (refer table) minimum span 0.6 kg/cm ² , maximum 1600 kg/cm ²
Connection	1/2" NPT (M) as standard* (other optional)
Accuracy	$\pm 1\%$ FSD (0.5% on request)
Over range	As per EN 837
Zero adjustment	Micrometer Pointer
Blow out disc	Provided (on top)
Temperature suitability	Ambient (-)20°C to 60°C, Media 200°C
Temperature Effect	Within $\pm 0.4\%$ FSD/10°C, when temperature changes from reference temperature of 20°C (as per EN-837 standard)
Optional	IBR certification Maxima pointer NACE compliance External Knob for zero setting Built in Snubber Built in Gauge Saver Liquid filled Case (SS case only) Vacuum Protection CE Atex

* For ranges above 1000 bar, connection shall be 1/2"BSP(M) with Bottom Entry only

Ranges

Gauge	bar, kg/cm ²	Least count
Vacuum	(-)1 to 0	0.02
	-760 to 0mmHg	20
Compound	(-)1 to 0.6	0.05
	(-)1 to 1.5	0.05
	(-)1 to 3	0.10
	(-)1 to 5	0.10
	(-)1 to 9	0.20
	(-)1 to 15	0.50
	(-)1 to 24	0.50
	(-)1 to 39	1.0
Pressure	0 to 0.6	0.01
Gauge	0 to 1	0.02
('C' shaped Bourdon)	0 to 1.6	0.05
	0 to 2.5	0.05
	0 to 4	0.10
	0 to 6	0.10
	0 to 10	0.20
	0 to 16	0.50
	0 to 25	0.50
	0 to 40	1.0
	0 to 60	1.0
Pressure	0 to 100	2.0
Gauge	0 to 160	5.0
Coil type	0 to 250	5.0
Bourdon	0 to 400	10.0
	0 to 600	10.0
	0 to 800	20.0
	0 to 1000	20.0
	0 to 1600	50.0

For range other than above please contact our design dept.

The parameters mentioned here are the standard specifications/ values generally used for most of the process applications. Any other specification not appearing here also can be provided as per customer requirement. For higher temperature services above 100°C, we recommend to provide suitable cooling arrangement (Syphon, Cooling Tower, Impulse Tubing, Diaphragm Seal etc.)

Under Technical Collaboration with M/s. Gauges Bourdon, France

Ordering Information

MODEL

MODEL							
BASIC MODEL CODE BSPG Dry Case LFBSPG Liquid Filled Case				OPTION A05 Accuracy $\pm 0.5\%$ FSD ATX Atex BGS Built In Gauge Saver BOB Blow out disc at back BSN Built In Snubber CLB Colour Band CEM CE marking DC2 Silicone Oil Filled Case DUS Dual Scale EXZ External Knob for Zero Adjustment FLG Flanged Process Conn GLY Glycerine filled Case IBR IBR MXP Maxima pointer with Acrylic Window NAC NACE OXY O2 Cleaning OR5 150% FSD Over range PHD Phenolic / Plastic Dial S4D SS DIAL (SS304) S6D SS DIAL (SS316) VCP Vacuum Protection L Nil CSU Chemical Seal ACC Accessory XXX Other			
MOUNTING V Bottom Entry, Local Mounting S Bottom Entry, Surface Mounting Y Bottom Entry, 2" Pipe Mounting C Back Entry, Local Mounting P Back Entry, Flush Panel Mounting							
DIAL SIZE 100 - 100 mm 150 - 150 mm							
CASE S4S SS 304 S6S SS 316 PHN Phenolic							
BOURDON S6S SS 316 S6L SS 316L S6T SS 316Ti MN4 Monel							
SOCKET S6S SS 316 S6L SS 316L S6T SS 316Ti MN4 Monel							
MOVEMENT S4S SS 304 S6S SS 316							
CONNECTION							
Conn	Code	Size	Code	Type	Code	Male/ Female	Code
Thread	T	1/4"	06	NPS	NS	Male	M
		3/8"	10	NPT	NT	Female	F
		1/2"	15	BSP	BP		
		3/4"	20	BSPT	BT		
		1"	25	JIS-PF	PF		
		M20	M20	JIS-PT	PT		
				Gas	GS		
				R	RR		
		Rp	RP				
		Pitch 1.5	C				
UNIT KSC kg/cm2(g) BAR bar(g) PSI psi(g) KPA kPa(g) MPA MPa(g) MBR mbar(g) MMW mm WC(g) CMW cm WC(g) MWC m WC(g) INW inch WC(g) MMH mm Hg(g) CMH cm Hg(g) INH inch Hg(g) XXX Other (Please specify)							
RANGE Please select from Table							
FLG - FLANGE							
Conn	Code	Size	Code	Rating#	Code	Facing	Code
Flange	F	1/2"	15	150	A	RF	RF
		3/4"	20	300	B	FF	FF
		1"	25	600	C	RTJ	RJ
		1-1/2"	40	900	D	LT	LT
		2"	50	1500	E	LG	LG
		3"	80	2500	F		

e.g. For 1/2"NPT(M), Code: **T15NTM**
 For M20x1.5 (F), Code: **TM20CF**

e.g. For 40 NB 300# RF flange, Model Code: **F40BRF**

Sample Model Code: BSPG-V-150-S4S-S6S-S6S-S4S-T15NTM-(0-10)-BAR-BOB

TEMPERATURE GAUGE

571292/2024/PS-SR-PM

TECHNICAL DATA SHEET FOR TEMPRATURE GAUGE		
S.no	Description	Technical Specification
1	Item	BIMETALLIC DIAL THERMOMETERS
2	Model	BDT-V-15-S4S-C10-150-S6S-15NTM- 0~80-DGC-TW(TWBT-01-S6S-30-20-11-T15NTF-T20NTM-150-50-4-0)
3	Manufacture	Gauges Bourdon (I) Pvt. Ltd.
4	Quantity	As per P&ID
5	Range	0 to 80 Degree
6	Dial Size	150mm
7	Accuracy	± 1% of FSD
8	Over Range Protection	130% of FSD
9	Bulb, Stem & Connection size	AISI 316 SS
10	Stem dia	10 mm
11	Enclosure	SS304 with bayonet type bezel ring, Weatherproof to IP68 as per IEC: 60529
12	Mounting	Bottom entry, local mounting
13	Standard Fitment	Zero adjustable pointer.
14	Connection Size	½" NPT (M)
15	Accessories	Thermowell Type: Bar Stock Material: SS 316 Process connection: ¾" NPT (M) Gauge connection: ½" NPT (F) Immersion length : As per Line Size. I D : 11 mm O.D: 20 mm

Bimetal Dial Thermometer

General

The Bimetal thermometer employs a bimetal strip in the form of helix (it works on the principle of thermal expansion - two metals having different coefficient of expansions are joined to form a bimetal. The resultant expansion of bimetal is proportional to temperature). Bimetal dial thermometers are simple in construction, yet rugged. They are used for measurement of temperature in most of the industrial applications. They are offered in the range of (-) 50°C to 600°C. With rigid stem having bottom or back entry. It can also be offered in every angle rotatable construction.

Features

- Rugged construction
- Bottom/Back entry, every angle construction
- Fast response
- Protection class IP-67
- Accuracy $\pm 1\%$ FSD
- High repeatability, low hysteresis
- Hermetically sealed case

Specifications

Ref. Standard	ASME B 40.200, EN 13190
Dial	100 mm or 150 mm in aluminium white background, black markings
Case	SS304 with bayonet bezel / SS316 optional
Protection	Weatherproof to IP - 67 (IS/IEC : 60947 / IEC : 60529)
Window	Shatterproof glass
Pointer	Aluminium, black, micrometer adjustable
Stem	SS304 or SS316 in 6 mm, 8 mm, 10 mm, 12 mm dia and length from 100 mm to 1000 mm as standard
Connection	1/2" NPT (M) as standard in SS304 or SS316 adjustable three piece compression fitting
Range	(-) 50°C to 600°C with a minimum span of 60°C
Accuracy	$\pm 1\%$ FSD
Over range	125% FSD (upto max temp range of 500°C)
Reset	Micrometer Pointer (standard) External (optional)
Optional	1) Silicon Oil Filled Case (Suitable upto 339°C Max) 2) Contacts: Single SPST, normally open to close on rise / fall in temperature (specify action required) adjustable over the entire range, rating 30 VA @ 230 V AC (100 mm dial, back entry only)
Note	1) For minimum insertion length essential for proper sensing, contact our design department. 2) Three point calibration certificate accompanies each thermometer.



Ordering Information

MODEL : BDT

MOUNTING			
V Bottom Entry, Local Mounting			
C Back Entry, Local Mounting			
E Every Angle, Local Mounting			

DIAL	
10 - 100 mm	15 - 150 mm

CASE	
S4	SS304
S6	SS316

STEM-OD	
A 6 mm	C 10 mm
B 8 mm	D 12 mm

STEM LENGTH	
Specify in mm	

STEM MATERIAL	
S4 - SS304	S6 - SS316

CONNECTION			
SIZE	TYPE	MALE / FEMALE	METRIC THREADS
6 1/4"	NT NPT	M Male	18 M - M 18 x 1.5
10 3/8"	BP BSP	F Female	20 M - M 20 x 1.5
15 1/2"	BT BSPT		24 M - M 24 x 1.5
20 3/4"	PF PF		XX - Any other
25 1"	GS Gas		
	NS NPS		

OPTION	
A	Thermowell
C	Colour Band
D	Dual Scale
E	1 SPST Electrical contact
S	Silicon Oil Filled Case *

UNIT	
C	Deg C
F	Deg F

RANGE **	
(-) 50 to (+) 30	0 to 200
(-) 30 to (+) 50	0 to 250
(-) 20 to (+) 60	0 to 300
0 to 60	0 to 350
0 to 80	0 to 400
0 to 100	0 to 500
0 to 120	0 to 600
0 to 160	

* Silicon Oil Filled Case shall be suitable up to maximum temperature of 339°C only.

** Ranges mentioned are in °C. Equivalent unit in °F can be provided on request.

The recommendations made in this catalogue are to be used as intended guide. No guarantee of material can be undertaken since other factors may affect the performance. We reserve the right to change the specifications mentioned in this catalogue without any notice as improvements & development is a continuous process at "General". Responsibility of typographical errors is specifically disclaimed.

FLOW METER

571292/2024/PS-SR-PM

TECHNICAL DATASHEET OF FLOWMETER (ROTAMETER)		
S.NO	DESCRIPTION	MATERIAL
1	MAKE	INSTRUMENTATION ENGINEERS PVT. LTD.
2	IE BYPASS TYPE	Glass TUBE ROTAMETER
3	CONNECTION	1/2 : BSP(F)
4	INLET / OUTLET	REAR / REAR
5	FLOAT / TUBE	316SS / BOROSILICATE
6	FLOW RANGE / INSCRIPTION	90-600/M3/HR (CHILLED WATER)
7	END FITTING	316SS / BOROSILICATE
8	OPER. PRESS	35MWC
9	OPER. TEMP	12 DEG. C
10	SPECIFIC GRAVITY	1
11	ACCURACY	+/- 2 % OF FSD
12	WEATHER PROOF PROTECTION	IP-65
13	LINE SIZE	200MM
14	ACCESSORIES	AS REQUIRED
15	Quantity	1+1=2(inc mandatory spares)



DESIGN SPECIFICATIONS

IE Glass Tube Variable Area Flow Meters

DESCRIPTION

IE Glass Tube Variable Area Flow Meters are intended for general in line and bypass metering applications where operating conditions are within the limitations of glass metering tubes. A wide range of capacities and options is available. These packed gland meters are constructed to withstand the stresses and vibrations inherent in industrial piping installations.

DESIGN FEATURES

- Dowel pin, side plate construction
- Detachable flow scales
- Precision bore ribbed borosilicate glass metering tubes
- Externally adjustable packing glands
- Connections can be rotated 360° at 90° intervals
- Laminated safety glass shielding
- 10 to 1 rangeability
- Scale length of 127 mm, 150 mm and 250 mm
- Standard floats are interchangeable in tubes of given flow meter size
- Wide choice of float types and capacity ranges

SPECIFICATIONS

WARNING: Do not operate this instrument in excess of the specifications listed below. Failure to heed warning may result in serious personal injury or damage to equipment.

Glass metering tubes are designed for operation up to the maximum operating pressures and temperatures as specified herein. Due to the inherent brittle characteristics of glass and conditions beyond our control, breakage could result below specified operating conditions. Possible glass tube breakage represents a potential hazard to operating personnel; therefore, operator protection should be supplied where operating pressures may exceed 50 psig. A customer supplied safety shield constructed of 1/2- inch acrylic plastic may be used or the glass tube meter may be replaced with an all-metal meter.

Capacities

- 150 mm scale (Table 4)
- 250 mm scale (Table 5)
- 250 mm scale, low-pressure drop floats (Table 6)
- 127 mm scale (Table 7)
- 127 mm scale, extension models (Table 8)

It is important to note that other capacity ranges are obtainable. Specific information on special ranges and capacities can be obtained from IE.

Performance

Industrial Accuracy: $\pm 2\%$ of full scale from 100% to 10% of scale reading.



Calibrated Accuracy: $\pm 1\%$ of full scale from 100% to 10% of scale reading.
Repeatability: 0.5% of full scale

Ratings

WARNING: Do not exceed the maximum pressures and temperatures given below. Exceeding these ratings could result in tube breakage and serious personal injury.

Table 1 - Pressure Ratings

Meter Size	Max. Operating Pressure (Kg/cm2g)
2	35.1
6	31.6
7	24.6
8	21.0
9	12.3
10	7.0
12	5
13	5

NOTES:

1. Maximum operating temperature rating is 121°C for gas service and 93°C for liquid service.
2. Pressure ratings are based on static pressure applicable at 121°C
3. Fluid temperatures below 0°C will cause frosting of the glass metering tube.
4. For safety reasons, glass tubes cannot be supplied for caustic services.

Instrumentation Engineers Pvt. Ltd.

Plots 1,2,3 Phase III, IDA Jeedimetla, Hyderabad 500 055
Tel: (40) 2309 5147 Fax: (40) 2309 6401
E-mail: sales@ieflowmeters.com

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Table 2 - Connections

Meter Size	Model 1110 In & Out Horizontal (Screwed)	Model 1114 In & Out Vertical (Screwed)	Model 1140 In & Out Horizontal (Flanged)	Model 1144 In & Out Vertical (Flanged)
2 - 6	1/4"	1/4"	1/2"	1/2"
7 - 8	1/2"	1/2"	1/2"	1/2"
9	3/4"	3/4"	3/4"	3/4"
10	1"	1"	1"	1"
12	1-1/2"	1-1/2"	1-1/2"	1-1/2"
13	1-1/2"	2"	1-1/2"	2"

Pressure Drop

See Capacity Tables

Scales

Nominal lengths: 127mm, 150mm and 250 mm

Type: Standard: Detachable aluminium plate; Optional: Detachable 316 stainless steel plate

Graduations: Choice of direct reading, arbitrary millimetre or 0-100 linear with calibration curves or percentage of maximum flow with factor tag.

Materials of Construction**METERING TUBES**

Borosilicate glass

FLOATS

Sizes 2-6: (Spherical) Tungsten Carbide, Glass or 316 Stainless Steel; Sizes 8-13: Standard: 316 Stainless Steel; Optional: Aluminium, Teflon or Hastelloy C

END FITTINGS

Steel, 316 stainless steel, hastelloy C, brass

PACKINGS

Standard: Neoprene; Optional: Viton, Teflon

O-RINGS

Standard: Neoprene; Optional: Viton, Teflon

SIDE PLATES

Standard: Steel; Optional: 316 Stainless Steel

GLAND RINGS

Standard: Steel; Optional: 316 Stainless Steel

WINDOW BEZELS

Standard: Aluminium; Optional: Stainless Steel

GLAND FOLLOWERS

Standard: Steel; Optional: 316 Stainless Steel

FASTNERS

304 Stainless Steel

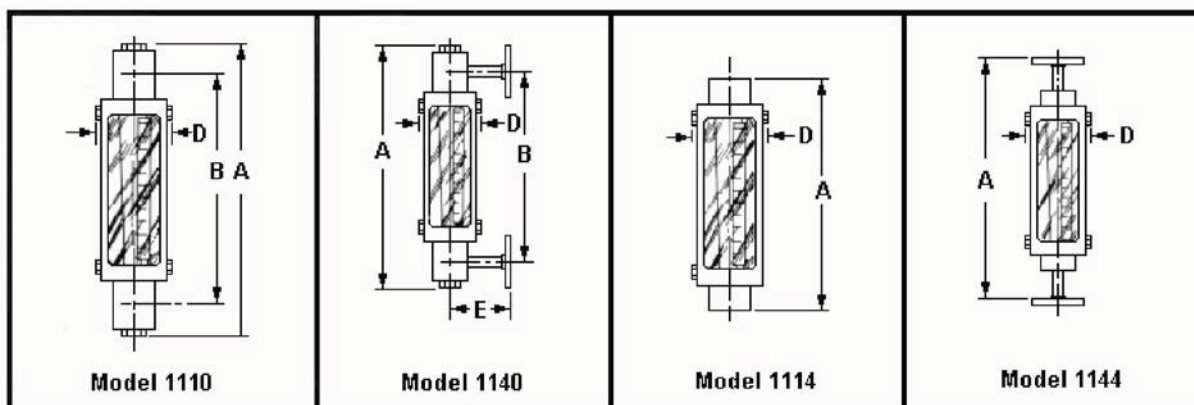
SIDE PLATE GASKETS

Asbestos

COATINGS (Optional)

Epoxy painting of external surfaces of end fittings, gland rings, gland followers and both surfaces of side plates. (Window frames, bolts and dowel pins not coated.)

Figure 1 – Dimensions in mm (for Certified Prints write to Factory)



Meter Size	Model 1110 & 1140						Model 1114		Model 1144		All Meters
	Nominal Scale Length						Nominal Scale Length		Nominal Scale Length		
	127 MM			250 MM			127 MM	250 MM	127 MM	250 MM	
	A	B	E	A	B	E	A	A	A	A	
2-6*	257.2	218.3	88.9	-	-	-	244.5	-	377.8	-	61.9
7&8	390.5	292.1	88.9	517.5	419.1	88.9	304.8	431.8	454	581	82.6
9	431.8	317.5	101.6	558.8	444.5	101.6	311.2	438.2	450.9	577.9	95.3
10	454	317.5	101.6	581	444.5	101.6	311.2	438.2	444.5	571.5	112.7
12	511.2	393.7	127	638.2	520.7	127	403.2	530.2	542.9	669.9	112.7
13	539.8	393.7	127	666.8	520.7	127	384.2	511.2	523.9	650.9	123.8

*Available in 150 MM scale length only and dimensions are identical to 127 MM meters.

Table 4 – Capacities (150mm Tubes)									Table 6 – Capacities (250mm Tubes Low Pressure Drop)						
Meter Size	Tube Number	Float Number	Maximum Flow Rates						Meter Size	Tube Number	Float Number	Float Material	Maximum Flow Rates		
			Water		Air	H ₂	He						Air SLPM	H ₂ O LPM	ΔP (iwc)
			CCM	ΔP (iwc)	SLPM			ΔP (iwc)							
2	R-2-15-AAA	G2	0.54	0.1	0.049	0.102	0.0444	0.18	7	R-7M-25-1	SPO OL	Aluminum 316 SS	11.3	0.36	0.59
		S2	2.49	0.58	0.146	0.322	0.144	0.67					19.5	0.63	1.61
		C2	4.9	1.16	0.245	0.594	0.268	1.24	8	R-8M-25-2	8-RV-2	Aluminum 316 SS	25.1	0.81	0.8
	R-2-15-AA	G2	1.11	0.1	0.096	0.209	0.0916	0.18					R-8M-25-4	Aluminum 316 SS	34.1
		S2	4.93	0.58	0.265	0.631	0.293	0.67		62.2	2.00	1.49			
		C2	9.33	1.16	0.43	1.12	0.533	1.24	9	R-9M-25-1	SPO OL	Aluminum 316 SS	103.9	3.35	0.93
	R-2-15-D	G2	5.75	0.1	0.37	1.03	0.491	0.18					R-9M-25-3	Aluminum 316 SS	128.7
		S2	20.6	0.58	0.82	2.52	1.39	0.67		195.4	6.29	2.81			
		C2	33.2	1.16	1.22	3.88	2.28	1.24	10	R-10M-25-1	10-RV-15	Aluminum 316 SS	163.3	5.26	0.8
	R-2-15-A	G2	18.3	0.1	0.95	2.63	1.54	0.18					R-10M-25-3	Aluminum 316 SS	221.8
		S2	52.1	0.58	1.9	5.57	3.42	0.67		340.8	10.98	1.89			
		C2	81.8	1.16	2.8	8.2	5.16	1.24	12	R-12M-25-4	12-RV-65	Aluminum 316 SS	340.6	10.97	1.21
	R-2-15-B	G2	52.8	0.1	2.35	8.01	5.02	0.18					R-12M-25-5	Aluminum 316 SS	599.1
		S2	133	0.58	4.6	15.9	10.3	0.67		617.4	19.89	1.29			
		C2	199	1.16	6.6	22.9	14.9	1.24	13	R-13M-25-1	13-RV-168	Aluminum 316 SS	700	22.55	1.81
	R-2-15-C	G2	84.6	0.1	3.8	12.9	8	0.18					R-13M-25-3	Aluminum 316 SS	1310.3
		S2	218	0.58	7.6	26.1	16.7	0.67		1077	34.69	2.21			
		C2	326	1.16	10.4	37.6	24.4	1.24				2091.1	67.35	4.9	
6	R-6-15-A	G6	200	0.2	8.6	29.9	19.2	0.36							
		S6	493	1.17	16.4	58.9	38.3	1.34							
		C6	726	2.32	23	83.3	55.2	2.49							
	R-6-15-B	G6	573	0.2	23.5	85.9	55.3	0.36							
		S6	1350	1.17	43	160	109	1.34							
		C6	1950	2.32	60	222	152	2.49							

Table 5 Capacities (250mm Tubes)

Meter Size	Tube Number	Float Number	Maximum Flow Rates						Meter Size	Tube Number	Float Number	Maximum Flow Rates					
			Water			Air						Water			Air		
			LPM	ΔP (iwc)	VIS LIMIT	SLPM	ΔP (iwc)	LPM				ΔP (iwc)	VIS LIMIT	SLPM	ΔP (iwc)		
6	R-6M-25-1A	G6 S6	0.28	0.2	1	12.3	0.36	10	R-10M-25-1	10-RV-64	17.18	8	14	511.18	9		
			0.68	1.17	1	22.8	1.34			10-RV-138	24.3	17	22	753.31	19		
7	R-7M-25-1	G7 S7	0.58	-	1	24	-			10-RS-64	21.35	15	3.7	662.78	17		
			1.48	-	1	50	-			10-RS-138	30.36	21	5	942.47	23		
8	R-8M-25-2	8-RV-3	2.08	2	2	62.87	3			10-LJ-238	56.43	52	1	1752.15	59		
		8-RV-8	2.95	5	3.3	91.19	6			10-RV-64	23.77	11	15	729.52	13		
		8-RV-14	3.94	8	4.6	121.21	9			10-RV-138	33.46	23	23	1022.35	26		
		8-RV-31	5.68	17	6	173.32	19			10-RS-64	29.67	15	3.7	910.49	17		
		8-RS-8	3.79	6	1.7	117.51	7		10-RS-138	41.37	29	5.5	1284.44	33			
		8-RS-14	5	11	1.8	155.19	12		10-LJ-238	87.43	98	1	2714.6	112			
		8-RS-31	7.15	22	2.6	219.76	25		12-RV-221	35.31	8	28	1070.78	9			
		8-LJ-48	11.39	45	1	353.72	51		12-RV-343	44.32	12	35	1334.44	14			
	R-8M-25-4	8-RV-3	2.95	4	2	89.77	4		12-RS-221	47.16	9	4	1434.41	10			
		8-RV-8	4.13	7	3.7	126.02	8		12-RS-343	58.4	13	4.3	1777.08	15			
		8-RV-14	5.49	12	5.4	166.52	14		12-LJ-740	113.55	31	1	3491.86	36			
		8-RV-31	7.8	23	7	235.62	28		12-RV-221	65.14	10	29	2022.44	11			
		8-RS-8	5.3	10	1.8	164.52	11		12-RV-343	79.3	15	36	2448.26	17			
		8-RS-14	6.93	17	1.9	214.1	19		12-RS-221	84.78	12	4.2	2601.19	14			
		8-RS-31	9.8	33	3.1	301.89	37		12-RS-343	101.82	18	4.5	3161.16	20			
		8-LJ-48	18.47	93	1	573.47	106		12-LJ-740	255.83	65	1	7944.05	75			
9	R-9M-25-1	9-RV-33	7.19	5	10	223.28	6	13	R-13M-25-1	13-RV-510	75.47	12	40	2309.5	14		
		9-RV-87	11.66	12	15	355.7	14			13-RV-760	90.05	18	50	2718.72	20		
		9-RS-33	9.54	7	2.4	296.23	8			13-RS-510	101.78	15	7.3	3067.06	17		
		9-RS-87	15.29	14	3.4	476.91	16			13-RS-760	120.55	21	9	3709.92	24		
		9-LJ-160	26.04	31	1	808.5	35			13-LJ-1394	206.66	46	1	-	-		
	R-9M-25-3	9-RV-33	9.58	6	11	295.94	7		13-RV-510	120.29	17	42	3707.09	19			
		9-RV-87	14.84	14	17	460.2	16		13-RV-760	142.32	24	52	4395.27	27			
		9-RS-33	12.26	7	2.4	380.9	8		13-RS-510	153.29	23	6.6	4759.23	26			
		9-RS-87	19.38	17	3.5	600.38	20		13-RS-760	187.55	32	9.3	5822.89	36			
		9-LJ-160	36.53	43	1	1134.02	49		13-LJ-1394	373.2	92	1	-	-			

* - These floats are not recommended for gas service unless operating pressure (downstream) exceeds 30 psig

All gas flows are at 14.7 psia and 70°F

Table 7 - Capacities (127mm Tubes)								Table 8 - Capacities (127mm Tubes extension floats)									
Meter Size	Tube Number	Float Number	Maximum Flow Rate					Meter Size	Tube Number	Float Number	Maximum Flow Rates						
			Water			Air					Water			Air			
			LPM	DP IWC	VIS. LIMIT	SLPM	DP IWC				LPM	DP IWC	VIS. LIMIT	SLPM	DP IWC		
8	R-8M-127-1	8-RV-3	1.9	2	2	58.1	2	8	R-8M-127-1	8-EV-30	5.7	11	8.5	176.3	12.6		
		8-RV-8	2.8	3	3.3	85.2	4			8-ES-30	7.6	13	1.4	235	14.5		
		8-RV-14	3.6	6	4.6	111.9	6			8-EV-135*	12.1	46.7	13.8	376	52.5		
		8-RV-31*	5.2	11	6	158.6	13			8-ES-135*	15.1	52.9	2	470.1	64.9		
		8-RS-8	3.5	4	1.7	108	4		R-8M-127-4	8-EV-30	8.7	14	11.4	270.3	14.5		
		8-RS-14	4.6	6	1.8	142.5	7			8-ES-30	10.6	16	1.7	329	17.5		
		8-RS-31*	6.4	13	2.6	197.7	15			8-EV-135*	18.9	63.4	17.8	587.6	68		
		8-LJ-48*	9.8	22	1	304.2	25			8-ES-135*	21.6	66.4	2.5	669.8	75.2		
	R-8M-127-4	8-RV-3	2.7	2	2	83.3	2	9	R-9M-127-1	9-EV-60	10.6	8.1	12.8	329	9.5		
		8-RV-8	3.9	4	3.7	118.7	5			9-ES-60	14.4	9.1	2	446.6	10.6		
		8-RV-14	5.1	7	5.4	154.6	8			9-EV-190*	17	25	16.8	528.8	26.4		
		8-RV-31*	7	14	7	213.3	15			9-ES-190*	22.7	27.3	2.5	705.1	32.7		
		8-RS-8	4.9	5	1.8	152.7	6		R-10M-127-1	10-EV-100	22.7	10.2	19.5	705.1	12		
		8-RS-14	6.4	8	1.9	197.7	10			10-ES-100	28.4	12.4	2.8	881.4	14.3		
		8-RS-31*	8.7	16	3.1	267.6	18			10-EV-270*	34.1	25.5	24.5	1057.6	30.7		
		8-LJ-48*	16.7	35	1	512.6	40			10-ES-270*	49.2	31.1	3.8	1527.7	34.7		
9	R-9M-127-1	9-RV-33	6.4	4.6	10	198.2	6	10	R-10M-127-3	10-EV-100	30.3	13.2	23	940.1	15.3		
		9-RV-87*	10	11.5	15	310	13			10-ES-100	39.7	16.1	3.4	1233.9	17.3		
		9-RS-33	8.3	5.3	2.3	256.3	6			10-EV-270*	51.1	31.9	30	1586.5	35.7		
		9-RS-87*	13.1	13	3.4	406	15			10-ES-270*	68.1	38.2	4.4	2115.3	37.7		
		9-LJ-160*	22.4	26.6	1	694	31										
10	R-10M-127-1	10-RV-64	16.2	7	14	502	8	12	R-12M-127-1	12-EV-285	41.6	9.9	27	1292.7	11.6		
		10-RV-138*	22.5	14	22	697	16			12-ES-285	53	10.6	3.9	1645.2	12.6		
		10-RS-64	20.4	8.4	3	634	10			12-EV-453*	56.8	15	32	1762.7	18.3		
		10-RS-138*	28.1	16.2	5	870	19			12-ES-453*	75.7	17.3	4.7	2350.3	19.3		
		10-LJ-238*	51.7	36	1	1604	41										
	R-10M-127-3	10-RV-64	22.8	9.2	15	689	11		R-12M-127-3	12-EV-285	83.3	11.9	39	2585.3	14.2		
		10-RV-138*	30.3	17.2	23	941	20			12-ES-285	106	17	44	3290.4	22.6		
		10-RS-64	28.6	11.4	3.7	872.3	13			12-EV-453*	113.6	13.9	5.8	3525.5	16.2		
		10-RS-138*	37.6	21	5.5	1179	24			12-ES-453*	143.8	19	6.6	4465.6	24.6		
		10-LJ-238*	85.1	61	1	2640	70										
12	R-12M-127-1	12-RV-221	32.6	8	28	997.7	9	13	R-13M-127-1	13-EV-505	132.5	15.9	50	4113	17.9		
		12-RV-343*	40.7	12	35.5	1233.3	14			13-ES-505	170.3	19.9	7.2	5288.2	22.9		
		12-RS-221	43.5	8	4	1333.9	10			13-EV-865*	174.1	23.1	59	5405.7	28.7		
		12-RS-343*	52.9	13	4.3	1605.7	15			13-ES-865*	227.1	30.7	8.5	7050.9	33.7		
		12-LJ-740*	92	28	1	2826.3	32										
	R-12M-127-3	12-RV-221	62.9	10	29	1915.9	11										
		12-RV-343*	74.5	14	36	2274.1	17										
		12-RS-221	82.6	12	4.2	2540.3	13										
		12-RS-343*	93.6	16	4.5	2883	19										
		12-LJ-740*	272.5	57	1	-	-										
		13	R-13M-127-1	13-RV-510	73	12	40			2216	14						
				13-RV-760*	86.7	17	50			2628.1	20						
13-RS-510	99.4			14	7.3	2982.1	16										
13-RS-760*	118.5			20	9	3571.2	23										
13-LJ-1394*	179.6			38	1	-	-										
R-13M-127-3	13-RV-510	115.1	16	42	3540	18											
	13-RV-760*	132.1	22	52	4083.7	25											
	13-RS-510	156.3	20	7.6	4853	23											
	13-RS-760*	176	27	9.3	5464	31											
	13-LJ-1394*	355	70	1	-	-											

* - These floats are not recommended for gas service unless operating pressure (downstream) exceeds 30 psig
All gas flows are at 14.7 psia and 70°F

Capacities (Float Size 2) PF Floats

Maximum Flow Rates						
Meter Size	Tube Number	Float Number	Water		Air	
			CCM	ΔP (IWC)	SLPM	ΔP (IWC)
2	R-2-15-AAA	PF1	3.74	0.58	0.21	0.67
		PF2	4.98		0.29	
	R-2-15-AA	PF1	7.4		0.39	
		PF2	9.86		0.53	
	R-2-15-A	PF1	78.5		2.85	
		PF2	104.2		3.8	
	R-2-15-B	PF1	199.5		6.9	
		PF2	266		9.2	
	R-2-15-C	PF1	327		11.4	
		PF2	436		15.2	

* All air flows are at 14.7 psia and 70°F

***TEMPERATURE
CUM RELATIVE
HUMIDITY
SENSOR***

Sr. No	Area	Abbr.	KKS Code No.	Instrument_Type	Service	Line size (mm)	Location	Manufacturer /Vendor Name	Instrument Range	PROCESS RANGE	SETPOINT/CALIBRATION	Model Number	REF_PMD_NO
12	HVAC	HS	10SAG12CU001	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	0.6	QFM271	PE-V0417-554-A021
13	HVAC	HS	10SAG12CU002	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	0.6	QFM271	PE-V0417-554-A021
14	HVAC	HS	10SAG12CU003	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	0.6	QFM271	PE-V0417-554-A021
15	HVAC	HS	10SAG12CU004	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	0.6	QFM271	PE-V0417-554-A021
3	HVAC	HS	30SAF12CU001	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	30SAF12CU002	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
5	HVAC	HS	30SAF12CU003	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
6	HVAC	HS	30SAF12CU004	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	50SAG12CU001	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	50SAG12CU002	Humidity Sensor	HS AT LV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
5	HVAC	HS	50SAG12CU003	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
6	HVAC	HS	50SAG12CU004	Humidity Sensor	HS AT MV Switchgear Room For AWU-1	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	50SAG14CU001	Humidity Sensor	HS AT Auxiliary Boiler MCC For AWU-3	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	50SAG14CU002	Humidity Sensor	HS AT Auxiliary Boiler MCC For AWU-3	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	10SAG14CU001	Humidity Sensor	HS AT Auxiliary Boiler MCC For AWU-3	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	30SAF14CU002	Humidity Sensor	HS AT Auxiliary Boiler MCC For AWU-3	NA	MPH Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	10SAF12CU001	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	10SAF12CU002	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	20SAF12CU001	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	30SAF12CU002	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	20SAF12CU001	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	30SAF12CU002	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	20SAF12CU001	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	20SAF12CU002	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
3	HVAC	HS	20SAF12CU001	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021
4	HVAC	HS	20SAF12CU002	Humidity Sensor	HS AT UAF Fan Outlet Of UAF	NA	ESP Building	SIEMENS	0 - 100 %	0 - 100 %	60%	QFM271	PE-V0417-554-A021

TECHNICAL DATASHEET OF TEMPERATURE CUM RH SENSOR		
S.no	Description	Technical specifications
1	Manufacturer	SIEMENS
2	Model No.	QFM2171
3	Quantity	1 No.s
4	Instrument Range	TEMPERATURE 0 - 50 DEGREE C , RH - 0 - 100%
5	Purpose of Measurement	TEMPERATURE + RH
6	Range	TEMPERATURE 0 - 50 DEGREE C , RH - 0 - 100%
7	Accuracy	(+/-)0.2°C) & (+/-) 3% for RH.(30% to 70%)
8	Process connection	NA
9	Repeatability	(+/-) 0.8K & (+/-) 5%
10	Maximum Process value	28 Degree C & 55% RH
11	Design Process value	27 Degree C (Normal) & 45% RH (Min)
12	Cable gland type	Double compression Brass
13	Cable Entry Type & Size	3C X 1.5 sqmm
14	Sensor	NTC-10K (inbuilt)
15	Sensor material	semiconducting material (metal oxides)
16	Housing Material	Fibre glass reinforced Polycarbonate
17	Mounting Type	DUCT Mounted / Wall Mounted
18	Signal type	4 - 20 mA
19	Ambient Temperature	(-)30 to +85 degree Centigrade
20	INPUT POWER	24VDC (from microcontroller)
21	Mandatory Spares	2 Nos. of Temperature cum RH sensor



Symaro™

Duct sensors

QFM21...

for relative humidity and temperature

-
- Operating voltage AC 24 V / DC 13.5...35 V
 - Signal output DC 0...10 V / 4...20 mA for relative humidity
 - Signal output DC 0...10 V / 4...20 mA / T1 / LG-Ni 1000 for temperature
 - Measuring accuracy ± 3 % r. h. within the comfort range
 - Range of use $-15...+60$ °C / 0...95 % r. h. (non-condensing)

Use

The QFM21... duct sensors are for use in air ducts of ventilation and air conditioning plant for acquiring:

- The relative humidity and
- The temperature.

The sensors are used as:

- Control sensors in the supply or extract air
- Reference sensors, e.g. for shifting the dew point
- Limit sensors, e.g. in connection with steam humidifiers
- Limit sensors, e.g. for measured value indication or for connection to a building automation and control system
- Sensors for enthalpy and absolute humidity, together with SEZ220 (see Data Sheet N5146)

Type summary

Type reference	Temperature measuring range	Temperature signal output	Humidity measuring range	Humidity signal output	Operating voltage
QFM2100	None	None	0...100 %	active, DC 0...10 V	AC 24 V or DC 13.5...35 V
QFM2101	None	None	0...100 %	active, 4...20 mA	DC 13.5...35 V
QFM2120	–35...+50 °C	passive, LG-Ni 1000	0...100 %	active, DC 0...10 V	AC 24 V or DC 13.5...35 V
QFM2140	–35...+50 °C	passive, T1 (PTC)	0...100 %	active, DC 0...10 V	AC 24 V or DC 13.5...35 V
QFM2160	0...50 °C / –35...+35 °C or –40...+70 °C	active, DC 0...10 V	0...100 %	active, DC 0...10 V	AC 24 V or DC 13.5...35 V
QFM2171	0...50 °C / –35...+35 °C or –40...+70 °C	active, 4...20 mA	0...100 %	active, 4...20 mA	DC 13.5...35 V

Ordering and delivery

When ordering, please give name and type reference, e.g.:

Duct sensor **QFM2120**

The sensor is supplied with mounting flange and cable entry gland M16.

Equipment combinations

All systems and devices capable of acquiring and handling the sensor's DC 0...10 V, 4...20 mA, LG-Ni 1000 or T1 output signal.

When using the sensors for minimum or maximum selection, for averaging, or to calculate enthalpy, enthalpy difference, absolute humidity, and dewpoint, we recommend to use the SEZ220 signal converter (see Data Sheet N5146).

Function

Relative humidity

The sensor acquires the relative humidity in the air duct via its capacitive humidity sensing element whose electrical capacitance changes as a function of the relative humidity.

The electronic measuring circuit converts the sensor's signal to a continuous DC 0...10 V or 4...20 mA signal, which corresponds to 0...100 % r. h.

Temperature

The sensor acquires the temperature in the air duct via its sensing element whose electrical resistance changes as a function of the temperature.

Depending on the type of sensor this change in resistance is converted either to an active DC 0...10 V or 4...20 mA output signal corresponding to a temperature range of 0... 50 °C, –35...+35 °C, or –40...+70 °C. The measuring range can be selected. The temperature is provided as a simulated passive LG-Ni 1000- or T1-output signal ($\cong$ –35...50 °C) as an alternative to the active output signal.

Simulated passive output signal

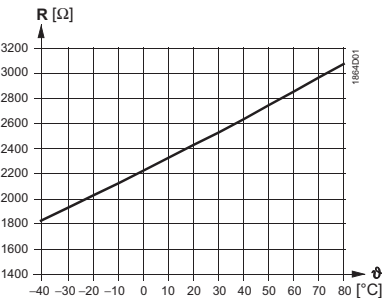
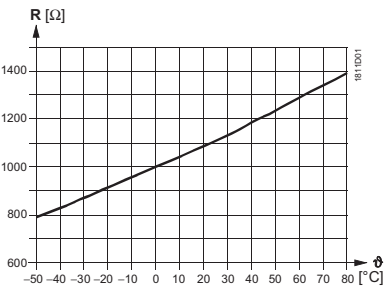
The measuring current of systems/devices for acquiring the electrical resistance of the passive sensor differs greatly and impacts self-heating of the temperature sensing element at the end of the measuring tip. To compensate the impact, the passive output signal is simulated with an electronic circuit.

Sensing elements,
simulated

LG-Ni 1000

T1 (PTC)

Characteristic:

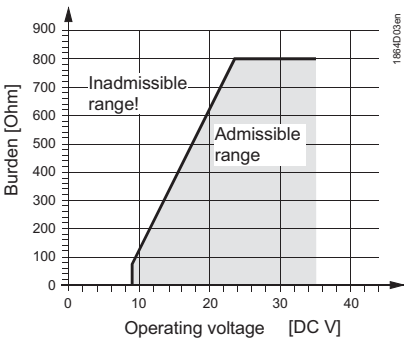


Legend

R Resistance value in Ohm
θ Temperature in degrees Celsius

Burden diagram

Output signal, terminal I1 / I2



Mechanical design

The duct sensor consists of a housing, a printed circuit board, connection terminals, a mounting flange and an immersion rod having a measuring tip.

The 2-sectional housing comprises a base and a removable cover (snap-on design). The measuring circuit and the setting element are located on the printed circuit board inside the cover, the connection terminals on the base.

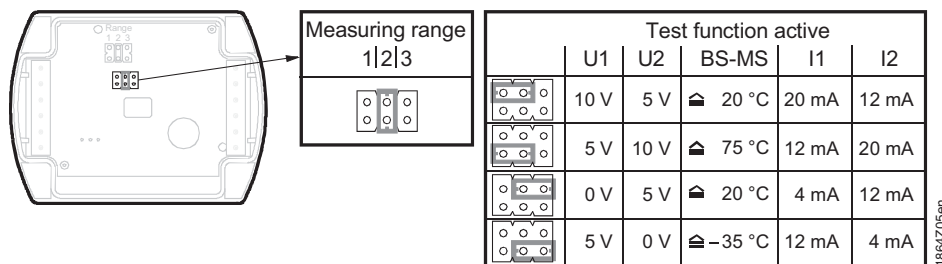
The sensing elements are located at the end of the measuring tip and protected by a filter cap.

Cable entry is made via the screwed cable gland M16 supplied with the sensor.

Immersion rod and housing are made of plastic and are rigidly connected.

The sensor is fitted with the mounting flange supplied with the sensor. The flange is to be placed over the immersion rod and then secured in accordance with the required immersion length.

Setting element



The setting element is located inside the cover. It comprises 6 pins and a jumper. It is used to select the required measuring range and to activate the test function.

The different jumper settings have the following meaning:

- *For the passive temperature measuring range:*
Jumper in the middle position (R2) = -35...+50 °C (factory setting)
- *For the active temperature measuring range:*
Jumper in the left position (R1) = -35...+35 °C,
Jumper in the middle position (R2) = 0...50 °C (factory setting)
Jumper in the right position (R3) = -40...+70 °C
- *For activating the test function:*
Jumper in the horizontal position: The values according to the table "Test function active" will be made available at the signal output.

Malfunction

- Should the temperature sensor become faulty a voltage of 0 V (4 mA) will be applied at signal output U2 (I2) or signal output BS-MS becomes high impedance (>1 MΩ) after 60 seconds, and the humidity signal at signal output U1 (I1) will reach 10 V (20 mA).
- Should the humidity sensor become faulty a voltage of 10 V (20 mA) will be applied at signal output U1 (I1) after 60 seconds, and the temperature signal will remain active.

Accessories

Name	Type reference
Filter cap (for replacement)	AQF3101

Engineering notes

A transformer for safety extra low-voltage (SELV) with separate windings for 100 % duty is required to power the sensor. When sizing and protecting the transformer, local safety regulations must be complied with.

When sizing the transformer, the power consumption of the duct sensor must be taken into consideration.

For correct wiring, refer to the Data Sheets of the devices with which the sensor is used.

The permissible cable lengths must be considered.

Cable routing and cable selection

It must be considered for routing of cables that the longer the cables run side by side and the smaller the distance between them, the greater electrical interference. Shielded cables must be used in environments with EMC problems.

Twisted pair cables are required for the secondary supply lines and the signal lines.

Note to QFM2171

Terminals G1(+) and I1(-) of the humidity output must always be connected to power, even if only terminals G2(+) and I2(-) of the temperature output are used!

Mounting notes

Location	Mount the sensor in the center of the duct wall. If used together with steam humidifiers, the minimum distance after the humidifier must be 3 m to max 10 m. Fit the sensor in the extract air duct if the application involves dew point shifting. Fit only the flange to the duct wall. The sensor is then inserted through the flange and engaged.
Caution!	- To ensure degree of protection IP 54, fit the sensor with the cable entry pointing downward. - The sensing elements inside the measuring tip are sensitive to impact. Avoid any impact on mounting.
Mounting instructions	The mounting instructions are printed on the inside of the package of the device.

Commissioning notes



Check wiring before switching on power. The temperature measuring range must be selected on the sensor, if required.
Wiring and the output signals can be checked by making use of the test function (refer to "Mechanical design").

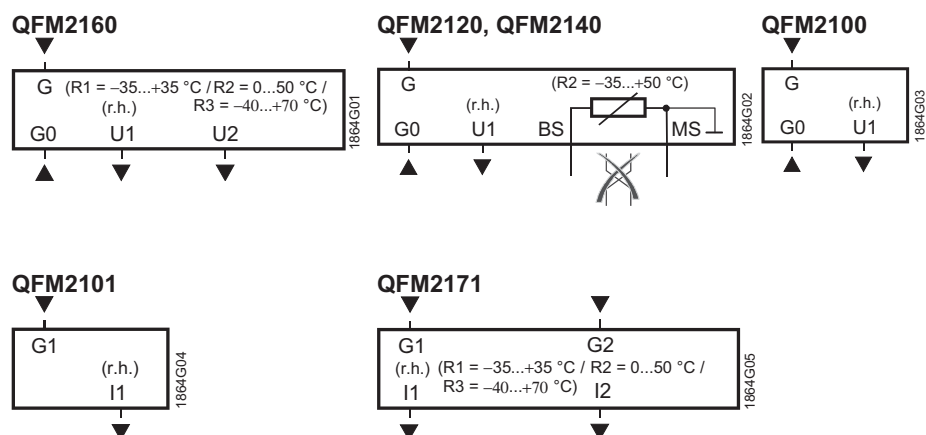
We recommend not to use voltmeters or ohmmeters directly at the sensing element. In the case of the simulated passive output signals, measurements with commercially available meters cannot be made (measuring current too small).

Technical data

Power supply	Operating voltage	AC 24 V $\pm$ 20 % or DC 13.5...35 V
	Frequency	50/60 Hz at AC 24 V
	Power consumption	$\leq$ 1 VA
Cable lengths for measuring signal	Perm. cable lengths	See data sheet of the device handling the signal
Functional data of humidity sensor	Range of use	0...95 % r. h. (non-condensing)
	Measuring range	0...100 % r. h.
	Measuring accuracy at 23 °C and AC/DC 24 V in	
	0...95 % r. h.	$\pm$ 5 % r. h.
	30...70 % r. h.	$\pm$ 3 %, r. h. typically
	Temperature dependency	$\leq$ 0.1 % r. h./°C
	Time constant at 0...50 °C and 10...80 % r.h.	< 20 s
	Perm. air velocity	20 m/s
	Output signal, linear (terminal U1)	DC 0...10 V $\hat{=}$ 0...100 % r. h., max. $\pm$ 1 mA
	Output signal, linear (terminal I1) Burden	4...20 mA $\hat{=}$ 0...100 % r. h. See "Function"
Functional data of temperature sensor with QFM2160, QFM2171	Measuring range	0...50 °C (R2 = factory setting), –35...+35 °C (R1) or –40...+70 °C (R3)
	Sensing element	NTC 10 k Ω
	Measuring accuracy at AC/DC 24 V in	
	15...35 °C	$\pm$ 0.8 K
	–35...+50 °C	$\pm$ 1 K
	Time constant	< 3.5 min. in with 2 m/s moved air
	Output signal, linear (terminal U2)	DC 0...10 V $\hat{=}$ 0...50 °C / –35...+35 °C / –40...+70 °C max. $\pm$ 1 mA

Functional data of temperature sensor with QFM2120, QFM2140	Output signal, linear (terminal I2)	4...20 mA $\cong$ 0...50 °C / -35...+35 °C /-40...+70 °C
	Burden	See "Function"
	Measuring range	-35...+50 °C
	Sensing element simulated, corresponding to	
	QFM2120	LG-Ni 1000
	QFM2140	T1 (PTC)
	Measuring accuracy at AC/DC 24 V in the range of	
	15...35 °C	± 0.8 K
	-35...+50 °C	± 1 K
	Time constant	< 3.5 min. in with 2 m/s moved air
Protective data	Perm. measuring current with	
	QFM2120	1.18...4.21 mA
	QFM2140	0.53...1.89 mA
Electrical connections	Degree of protection of housing	IP 54 as per IEC 60 529 in built-in state
	Safety class	III as per EN 60 730
	Connection terminals for	1 $\times$ 2.5 mm ² or 2 $\times$ 1.5 mm ²
Environmental conditions	Cable entry gland (enclosed)	M 16 x 1.5
	Operation	IEC 60721-3-3
	Climatic conditions	Class 3K5
	Temperature (housing with electronics)	-15...+60 °C
	Humidity	0...95 % r. h. (non-condensing)
	Mechanical conditions	Class 3M2
	Transport	IEC 60721-3-2
	Climatic conditions	Class 2K3
	Temperature	-25...+70 °C
	Humidity	<95 % r. h.
Materials and colors	Mechanical conditions	Class 2M2
	Base	Polycarbonate, RAL 7001 (silver-grey)
	Cover	Polycarbonate, RAL 7035 (light-grey)
	Immersion rod	Polycarbonate, RAL 7001 (silver-grey)
	Filter cap	Polycarbonate, RAL 7001 (silver-grey)
	Mounting flange	PA66 – GF35 (black)
	Cable entry gland	PA, RAL 7035 (light-grey)
	Sensor (complete assembly)	Silicone-free
	Packaging	Corrugated cardboard
Standards and directives	Product standard: Automatic electrical controls for household and similar use	EN 60 730-1
	Electromagnetic compatibility	
	Immunity	EN 61 000-6-1
	Emissions	EN 61 000-6-3
	CE conformity to	EMC directive 2004/108/EC
	C-tick conformity (EMC) to	EN 61 000-6-3
	UL conformity ¹⁾	UL 873
Environmental compatibility	Environmental product declaration	ISO 14001 (environment)
	CE1E1864en provides information on environmentally compatible product design and assessment (RoHS compliance, composition of substances, packaging, environmental benefit, disposal).	ISO 9001 (quality) SN 36350 (environmental comp. products) RL 2002/95/EC (RoHS)
Weight	Incl. packaging	
	QFM21...	Approx. 0.18 kg

1) Does not apply to the **QFM2160** duct sensor!

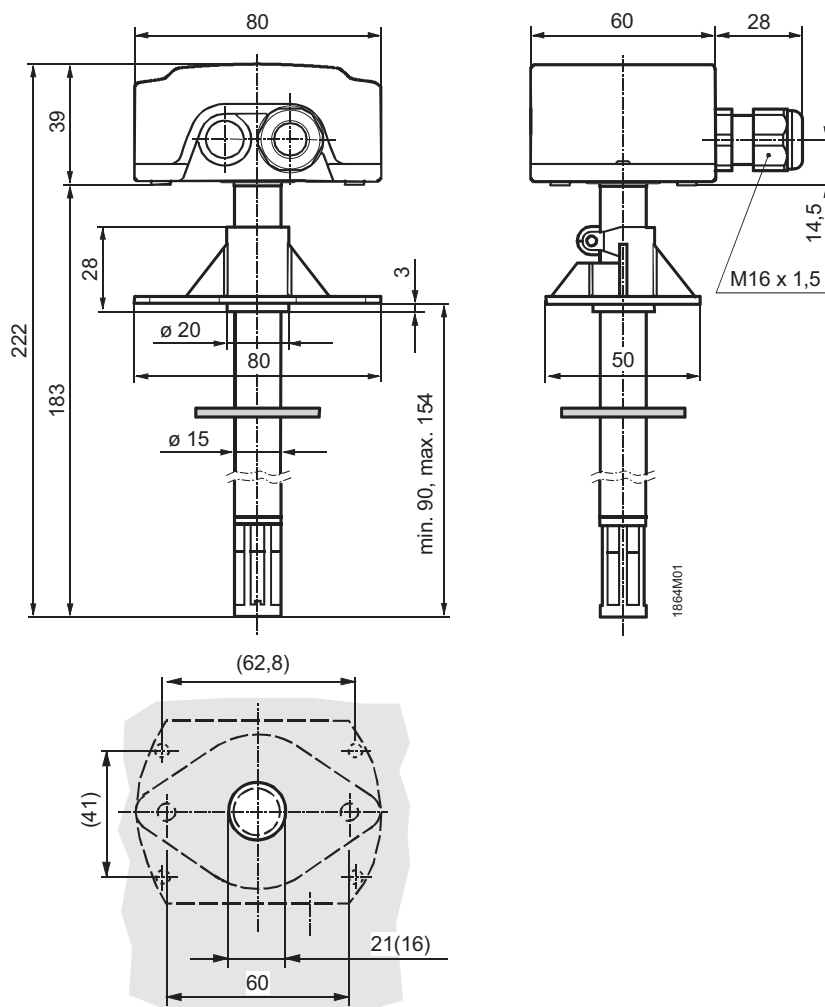


G, G0	Operating voltage AC 24 V (SELV) or DC 13.5...35 V
G1, G2	Operating voltage DC 13.5...35 V
U1	Signal output DC 0...10 V for 0...100 % r. h.
U2	Signal output DC 0...10 V for temperature range 0...50 °C (R2 = factory setting), -35...+35 °C (R1) or -40...+70 °C (R3)
I1	Signal output 4...20 mA for 0...100 % r. h.
I2	Signal output 4...20 mA for temperature range 0...50 °C (R2 = factory setting), -35...+35 °C (R1) or -40...+70 °C (R3)
BS, MS	Signal output LG-Ni 1000- or T1 for temperature range -35...+50 °C (passive, simulated); wires must not be interchanged

Note on connection terminals of the QFM2171:

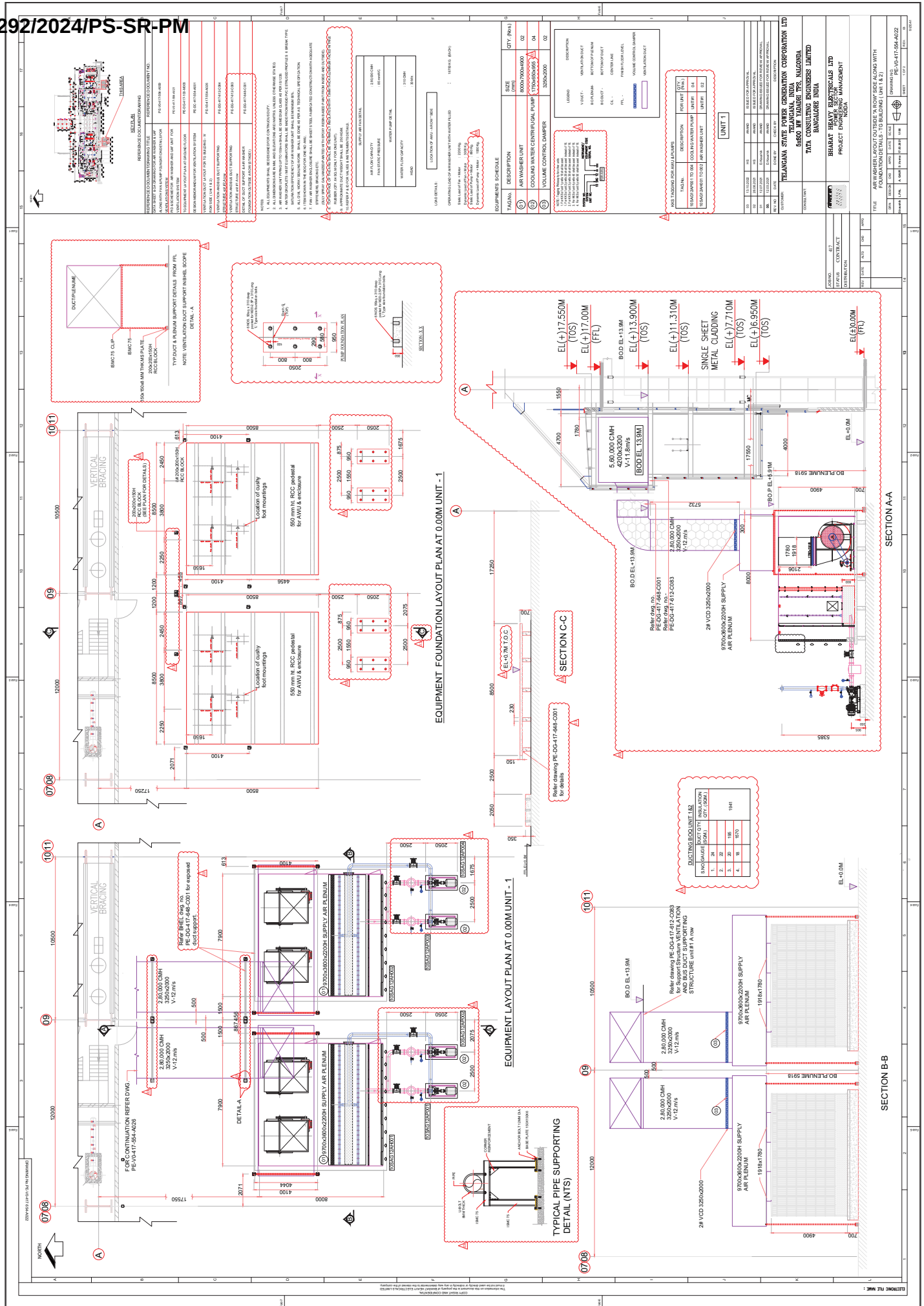
Terminals G1(+) and I1(-) for the humidity output must always be connected to power, even if only the temperature output G2(+) and I2(-) is used!

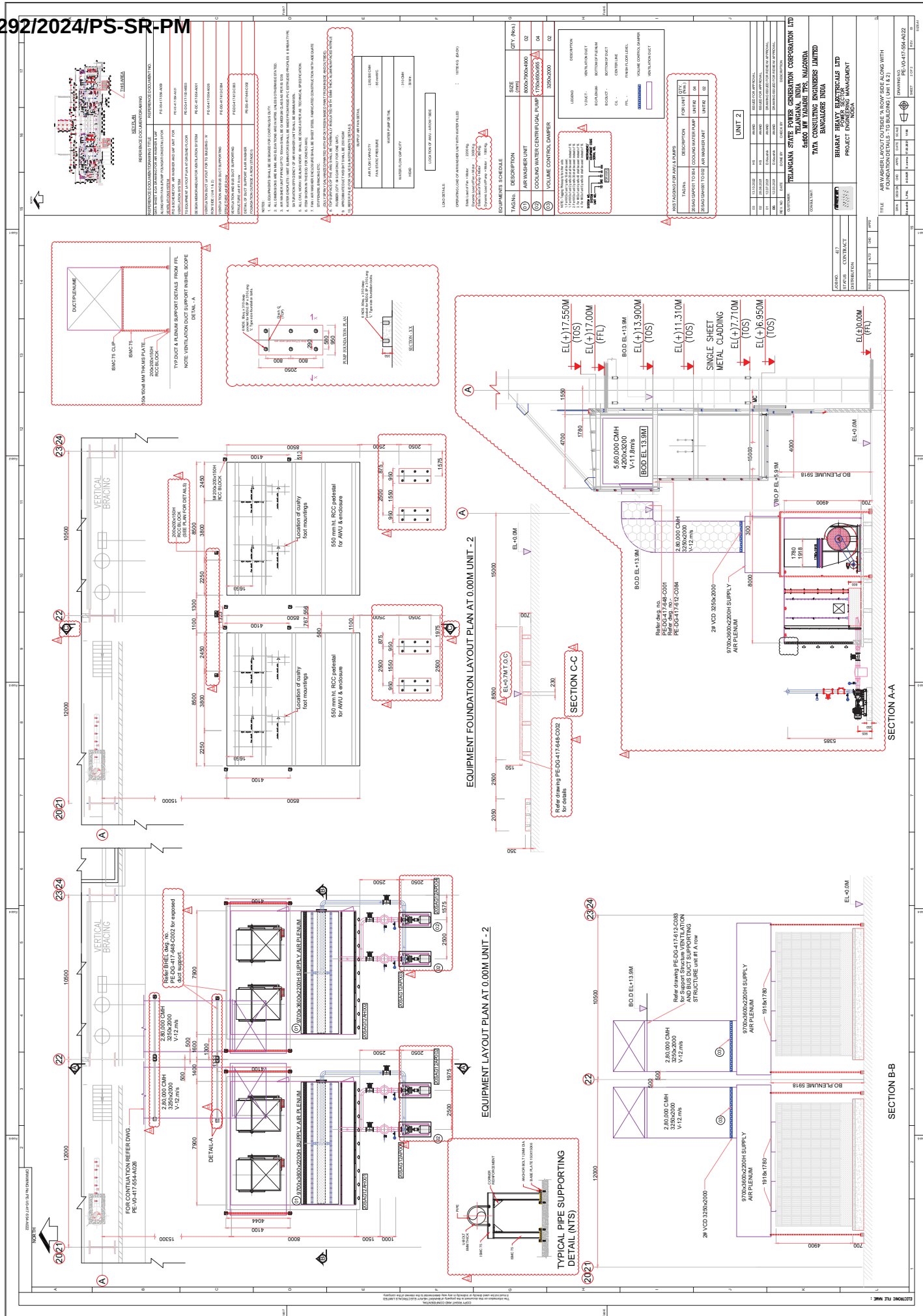
Dimensions

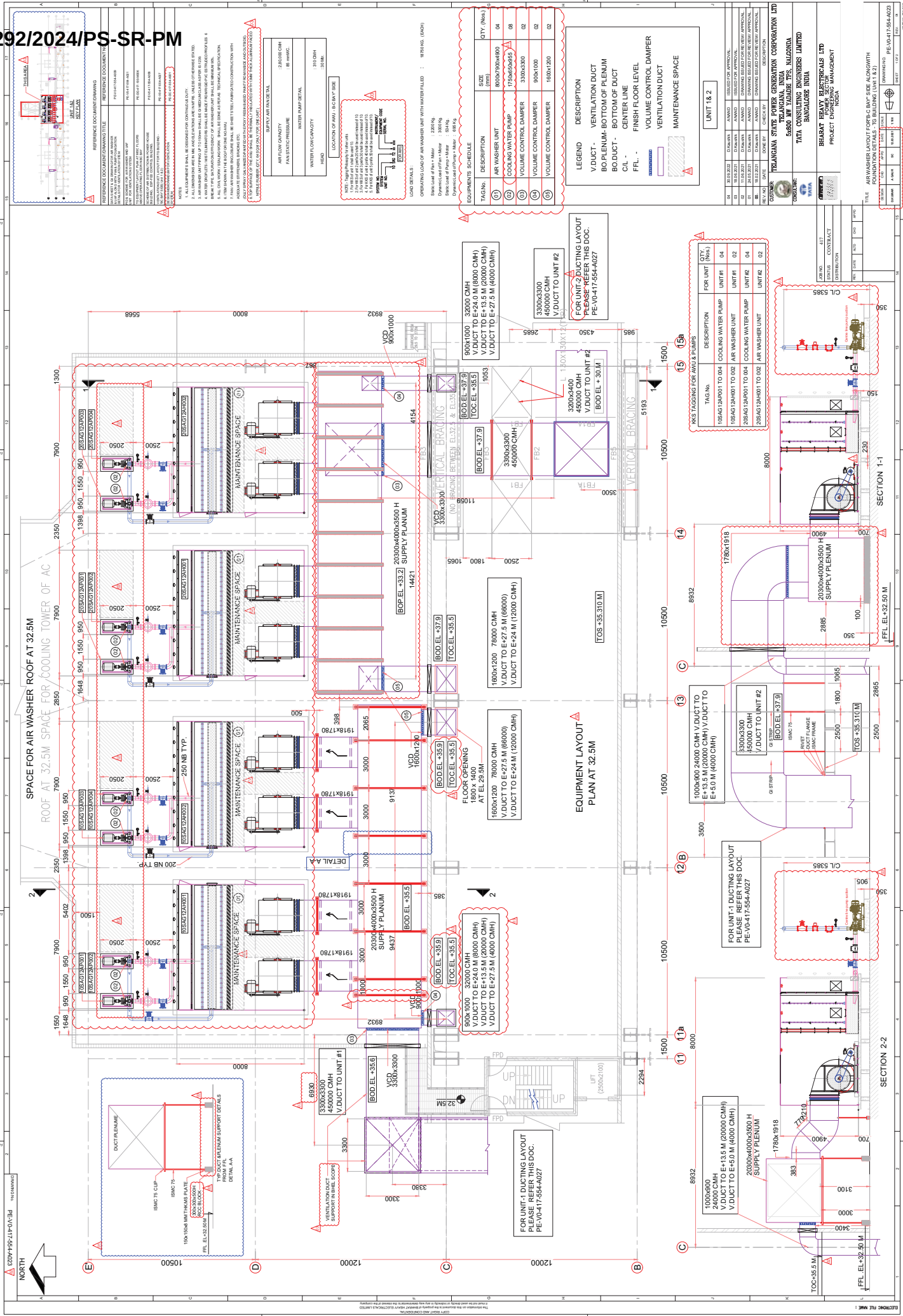


Drilling plan with (without) mounting flange

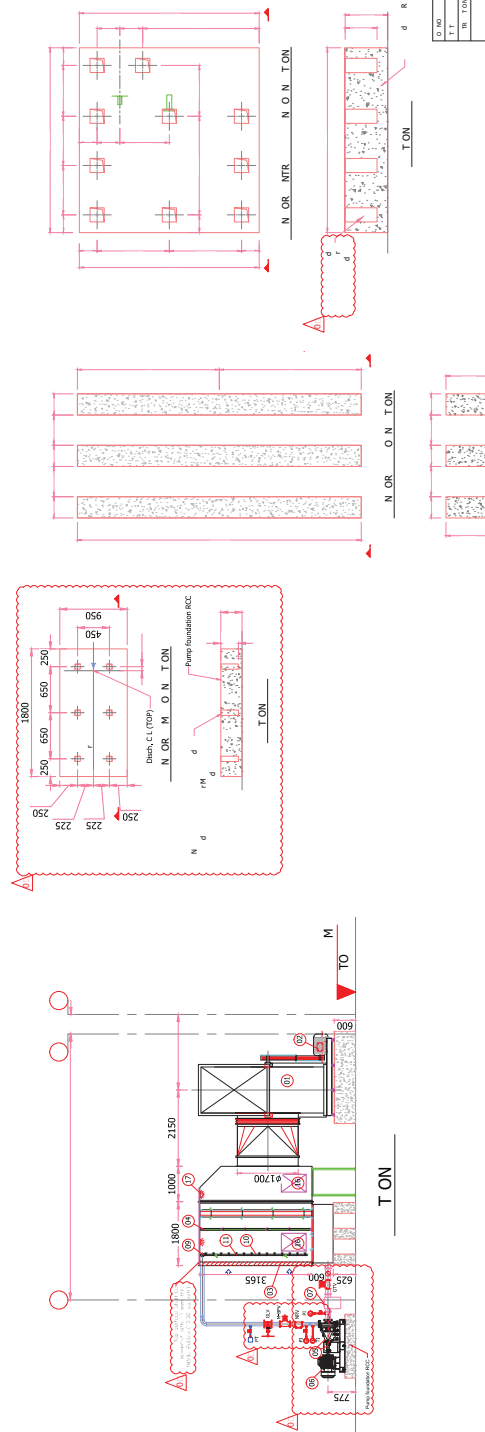
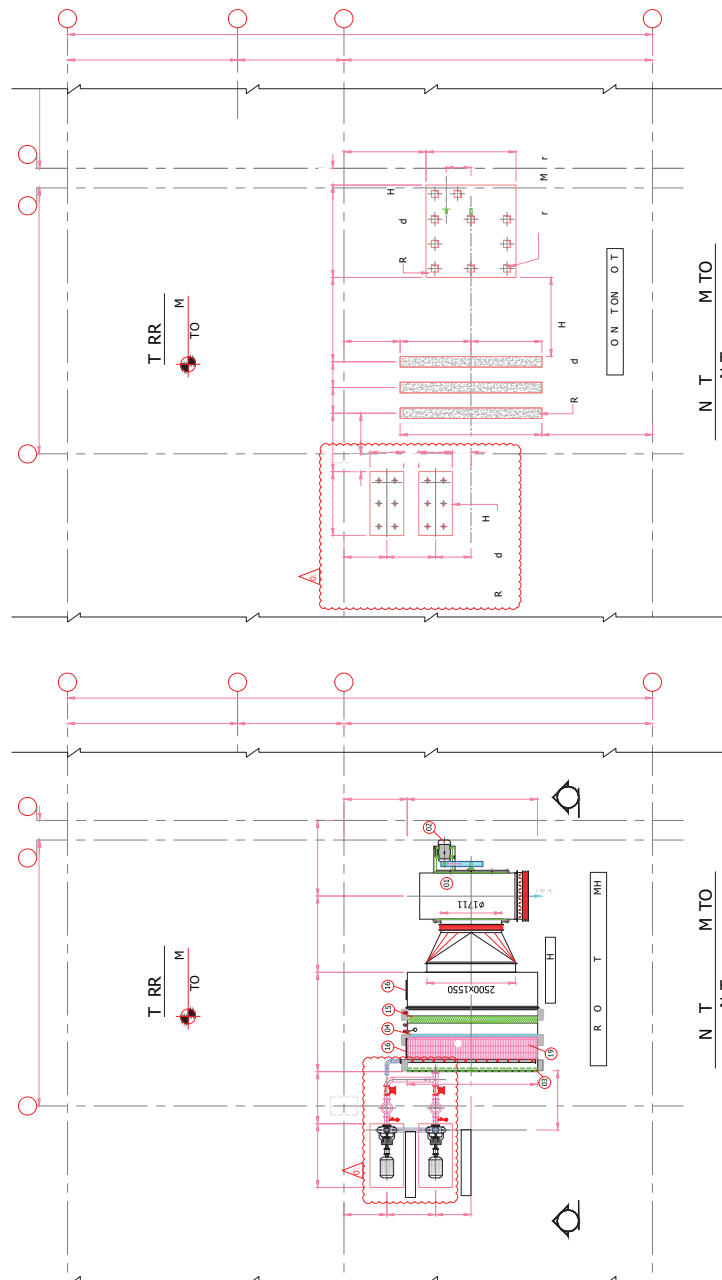
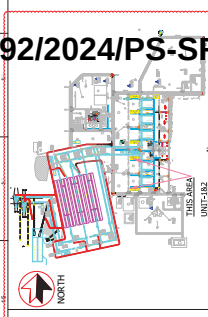
Dimensions in mm









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VENTILATION DUCT LAYOUT FOR BUILDING - 'A' ROW SIDE (UNIT 1 & 2)

UNIT - 2

TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA, INDIA
500001 HYDRABAD, INDIA
TATA CONSULTING ENGINEERS LIMITED
BANGALORE, INDIA
BEHARAT HEAVY ELECTRICALS LTD
PROJECT ENGINEERING MANAGEMENT
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TATA CONSULTING ENGINEERS LIMITED
BANGALORE, INDIA
BEHARAT HEAVY ELECTRICALS LTD
PROJECT ENGINEERING MANAGEMENT
INDIA

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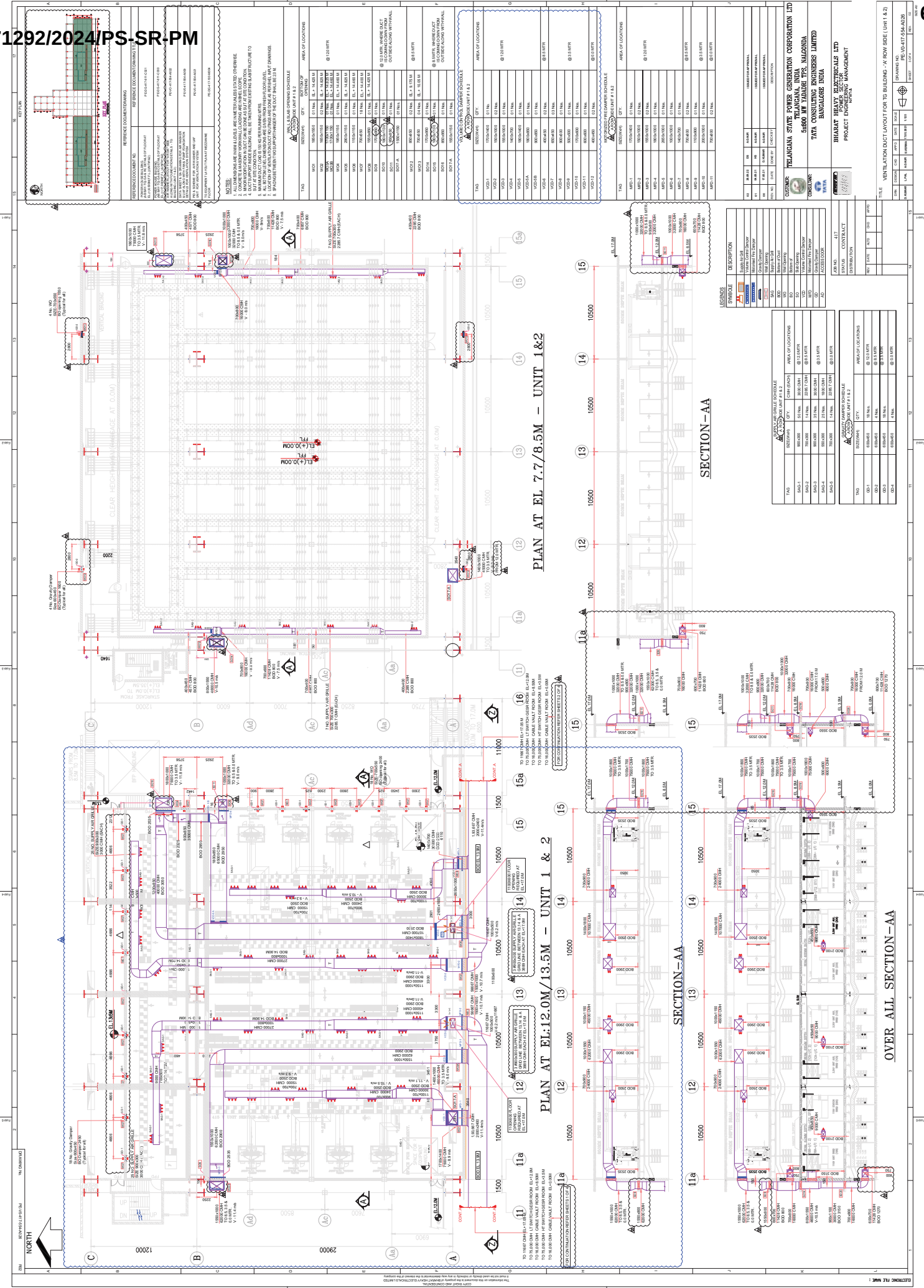
TELANGANA STATE POWER GENERATION CORPORATION LTD
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INDIA



REFERENCE COMMENTARY

NO.	DESCRIPTION
1	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:
2	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:
3	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:
4	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:
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9	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:
10	FOR THE BUILDING, THE FOLLOWING ARE THE REFERENCE COMMENTARY:

- NOTES
1. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:
 2. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:
 3. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:
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 8. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:
 9. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:
 10. THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING:

AREA OF LOCATIONS

TAG	REMARKS	QTY	UNIT	AREA OF LOCATIONS
1001	1001	1	SQ. M	1001
1002	1002	1	SQ. M	1002
1003	1003	1	SQ. M	1003
1004	1004	1	SQ. M	1004
1005	1005	1	SQ. M	1005
1006	1006	1	SQ. M	1006
1007	1007	1	SQ. M	1007
1008	1008	1	SQ. M	1008
1009	1009	1	SQ. M	1009
1010	1010	1	SQ. M	1010

AREA OF LOCATIONS

TAG	REMARKS	QTY	UNIT	AREA OF LOCATIONS
1011	1011	1	SQ. M	1011
1012	1012	1	SQ. M	1012
1013	1013	1	SQ. M	1013
1014	1014	1	SQ. M	1014
1015	1015	1	SQ. M	1015
1016	1016	1	SQ. M	1016
1017	1017	1	SQ. M	1017
1018	1018	1	SQ. M	1018
1019	1019	1	SQ. M	1019
1020	1020	1	SQ. M	1020

AREA OF LOCATIONS

TAG	REMARKS	QTY	UNIT	AREA OF LOCATIONS
1021	1021	1	SQ. M	1021
1022	1022	1	SQ. M	1022
1023	1023	1	SQ. M	1023
1024	1024	1	SQ. M	1024
1025	1025	1	SQ. M	1025
1026	1026	1	SQ. M	1026
1027	1027	1	SQ. M	1027
1028	1028	1	SQ. M	1028
1029	1029	1	SQ. M	1029
1030	1030	1	SQ. M	1030

AREA OF LOCATIONS

TAG	REMARKS	QTY	UNIT	AREA OF LOCATIONS
1031	1031	1	SQ. M	1031
1032	1032	1	SQ. M	1032
1033	1033	1	SQ. M	1033
1034	1034	1	SQ. M	1034
1035	1035	1	SQ. M	1035
1036	1036	1	SQ. M	1036
1037	1037	1	SQ. M	1037
1038	1038	1	SQ. M	1038
1039	1039	1	SQ. M	1039
1040	1040	1	SQ. M	1040

AREA OF LOCATIONS

TAG	REMARKS	QTY	UNIT	AREA OF LOCATIONS
1041	1041	1	SQ. M	1041
1042	1042	1	SQ. M	1042
1043	1043	1	SQ. M	1043
1044	1044	1	SQ. M	1044
1045	1045	1	SQ. M	1045
1046	1046	1	SQ. M	1046
1047	1047	1	SQ. M	1047
1048	1048	1	SQ. M	1048
1049	1049	1	SQ. M	1049
1050	1050	1	SQ. M	1050

LEGENDS

SYMBOL	DESCRIPTION
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

LEGENDS

SYMBOL	DESCRIPTION
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20

LEGENDS

SYMBOL	DESCRIPTION
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30

LEGENDS

SYMBOL	DESCRIPTION
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40

LEGENDS

SYMBOL	DESCRIPTION
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50

LEGENDS

SYMBOL	DESCRIPTION
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60

LEGENDS

SYMBOL	DESCRIPTION
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70

LEGENDS

SYMBOL	DESCRIPTION
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80

LEGENDS

SYMBOL	DESCRIPTION
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90

LEGENDS

SYMBOL	DESCRIPTION
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92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

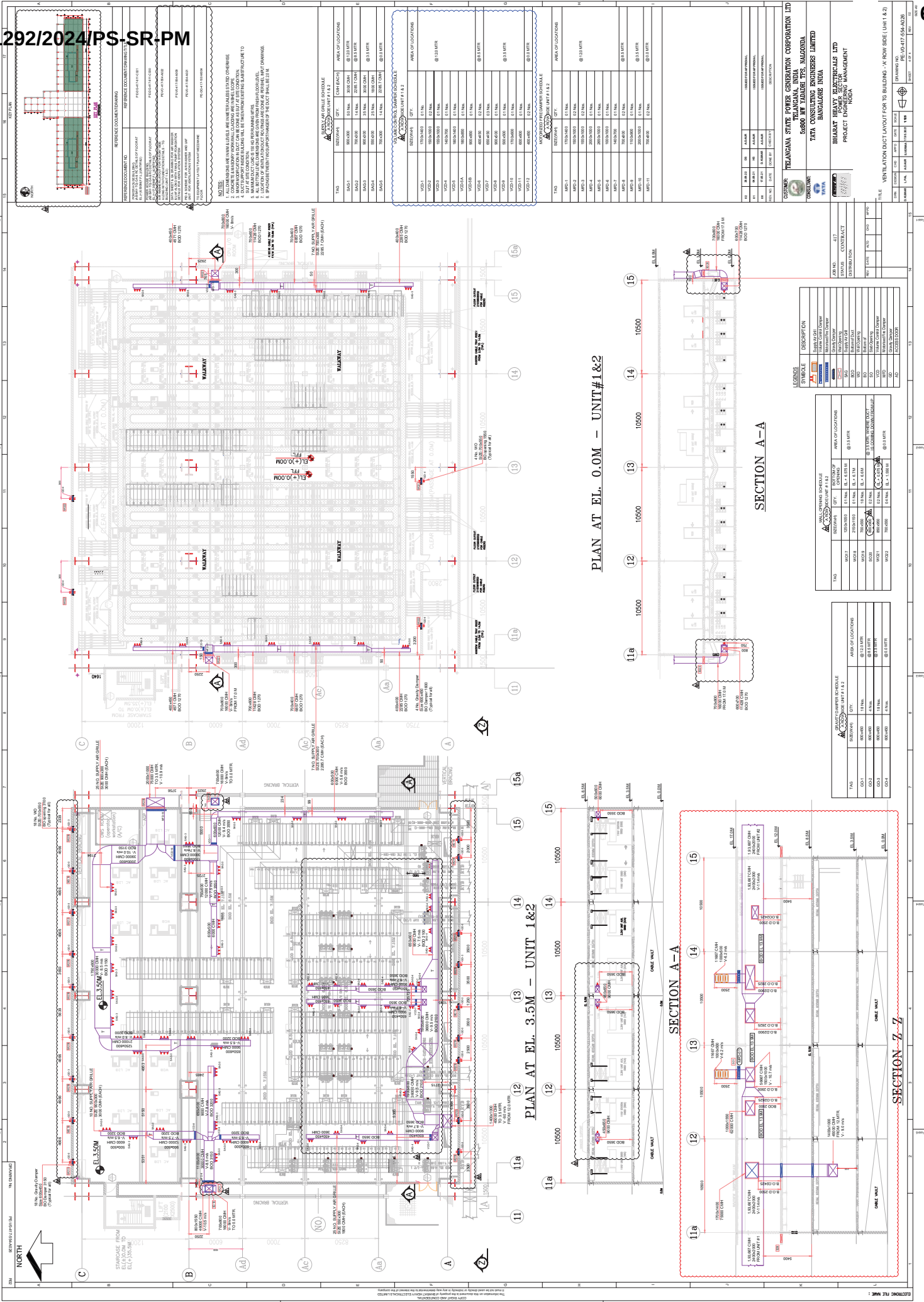
OVER ALL SECTION-AA

PLAN AT EL. 7.7/8.5M - UNIT 1&2

PLAN AT EL. 12.0M/13.5M - UNIT 1 & 2

SECTION-AA

SECTION-AA



PLAN AT EL. 0.0M - UNIT 1&2

PLAN AT EL. 3.5M - UNIT 1&2

SECTION A-A

SECTION A-A

SECTION Z-Z

REFERENCE DOCUMENTS

NO.	DESCRIPTION
1	571292/2024/PS-SR-PM
2	571292/2024/PS-SR-PM
3	571292/2024/PS-SR-PM
4	571292/2024/PS-SR-PM
5	571292/2024/PS-SR-PM
6	571292/2024/PS-SR-PM
7	571292/2024/PS-SR-PM
8	571292/2024/PS-SR-PM
9	571292/2024/PS-SR-PM
10	571292/2024/PS-SR-PM

- NOTES
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. ALL WALLS ARE 200mm THICK UNLESS OTHERWISE SPECIFIED.
 3. ALL FLOORS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 4. ALL ROOFS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 5. ALL STAIRS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 6. ALL DOORS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 7. ALL WINDOWS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 8. ALL VENTILATION DUCTS ARE 100mm THICK UNLESS OTHERWISE SPECIFIED.
 9. ALL ELECTRICAL WIRING IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
 10. ALL PLUMBING AND SANITARY WORK IS TO BE DONE IN ACCORDANCE WITH THE NATIONAL PLUMBING AND SANITARY CODE.

STRUCTURAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
1	100mm THICK CONCRETE	1000	m ³
2	200mm THICK CONCRETE	2000	m ³
3	300mm THICK CONCRETE	3000	m ³
4	400mm THICK CONCRETE	4000	m ³
5	500mm THICK CONCRETE	5000	m ³
6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

MECHANICAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
1	100mm THICK CONCRETE	1000	m ³
2	200mm THICK CONCRETE	2000	m ³
3	300mm THICK CONCRETE	3000	m ³
4	400mm THICK CONCRETE	4000	m ³
5	500mm THICK CONCRETE	5000	m ³
6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

ELECTRICAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
1	100mm THICK CONCRETE	1000	m ³
2	200mm THICK CONCRETE	2000	m ³
3	300mm THICK CONCRETE	3000	m ³
4	400mm THICK CONCRETE	4000	m ³
5	500mm THICK CONCRETE	5000	m ³
6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

MECHANICAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
1	100mm THICK CONCRETE	1000	m ³
2	200mm THICK CONCRETE	2000	m ³
3	300mm THICK CONCRETE	3000	m ³
4	400mm THICK CONCRETE	4000	m ³
5	500mm THICK CONCRETE	5000	m ³
6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

ELECTRICAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
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2	200mm THICK CONCRETE	2000	m ³
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4	400mm THICK CONCRETE	4000	m ³
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6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
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MECHANICAL FRAME SCHEDULE

NO.	DESCRIPTION	QTY	UNIT
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5	500mm THICK CONCRETE	5000	m ³
6	600mm THICK CONCRETE	6000	m ³
7	700mm THICK CONCRETE	7000	m ³
8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

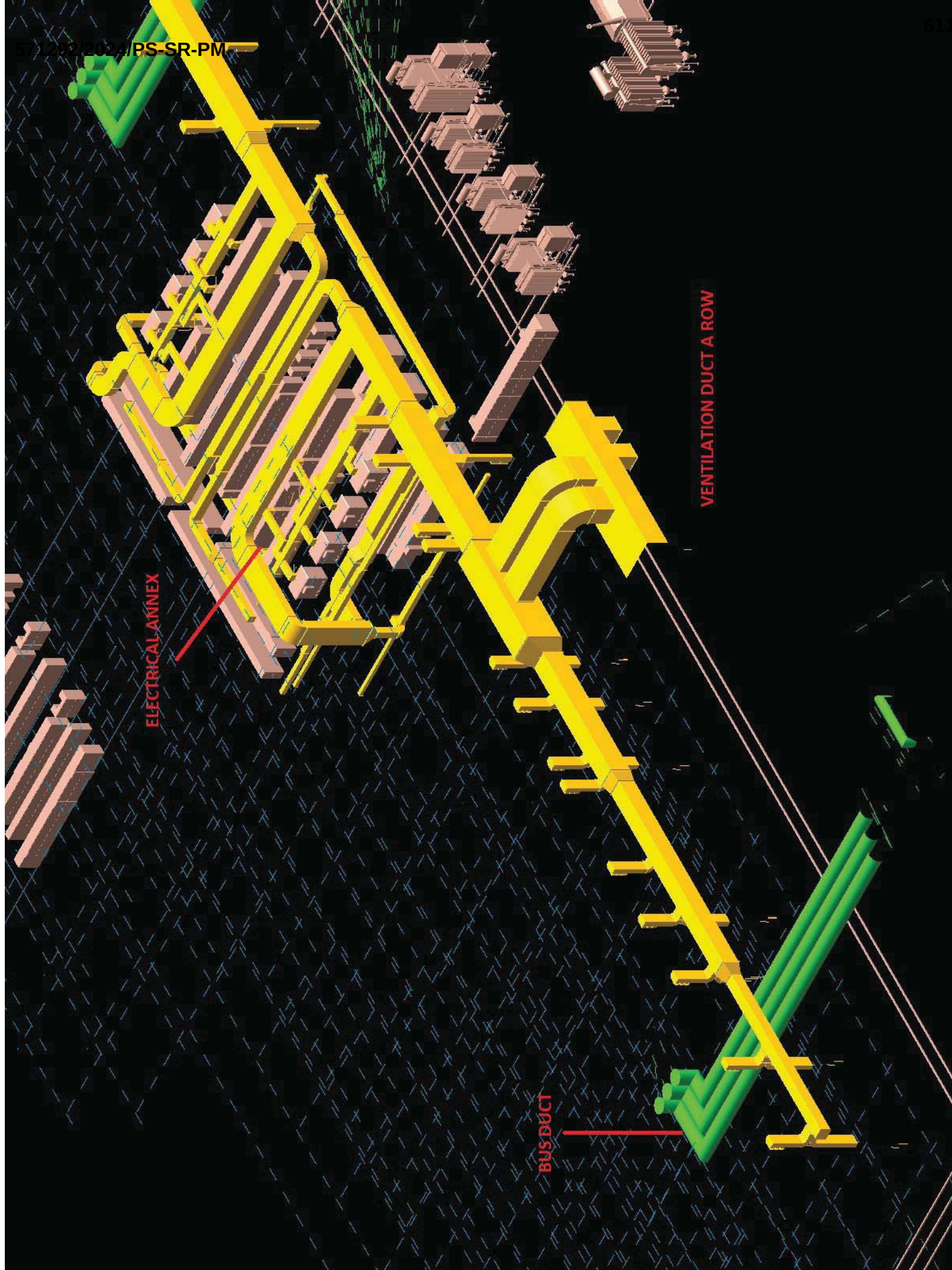
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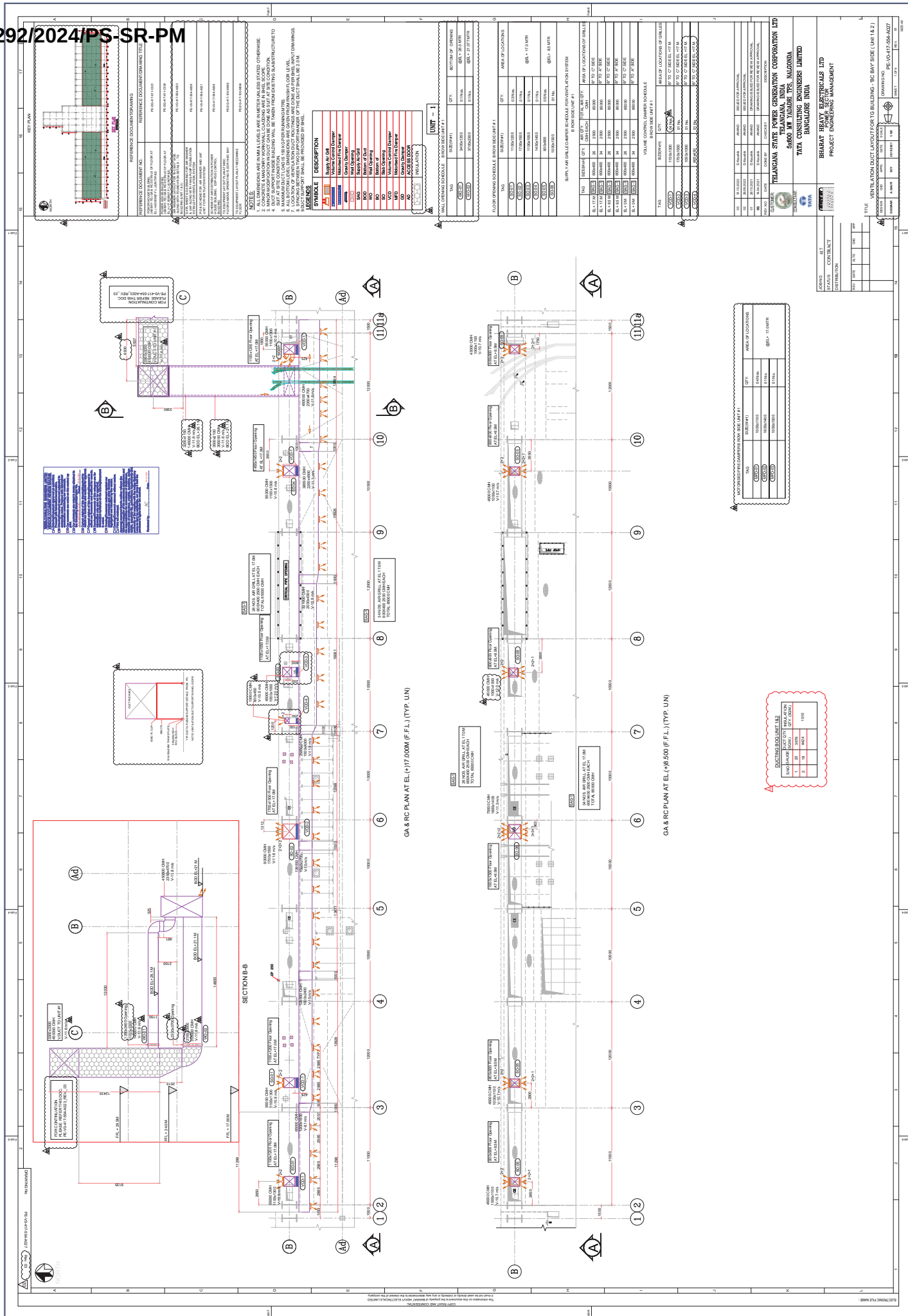
NO.	DESCRIPTION	QTY	UNIT
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2	200mm THICK CONCRETE	2000	m ³
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8	800mm THICK CONCRETE	8000	m ³
9	900mm THICK CONCRETE	9000	m ³
10	1000mm THICK CONCRETE	10000	m ³

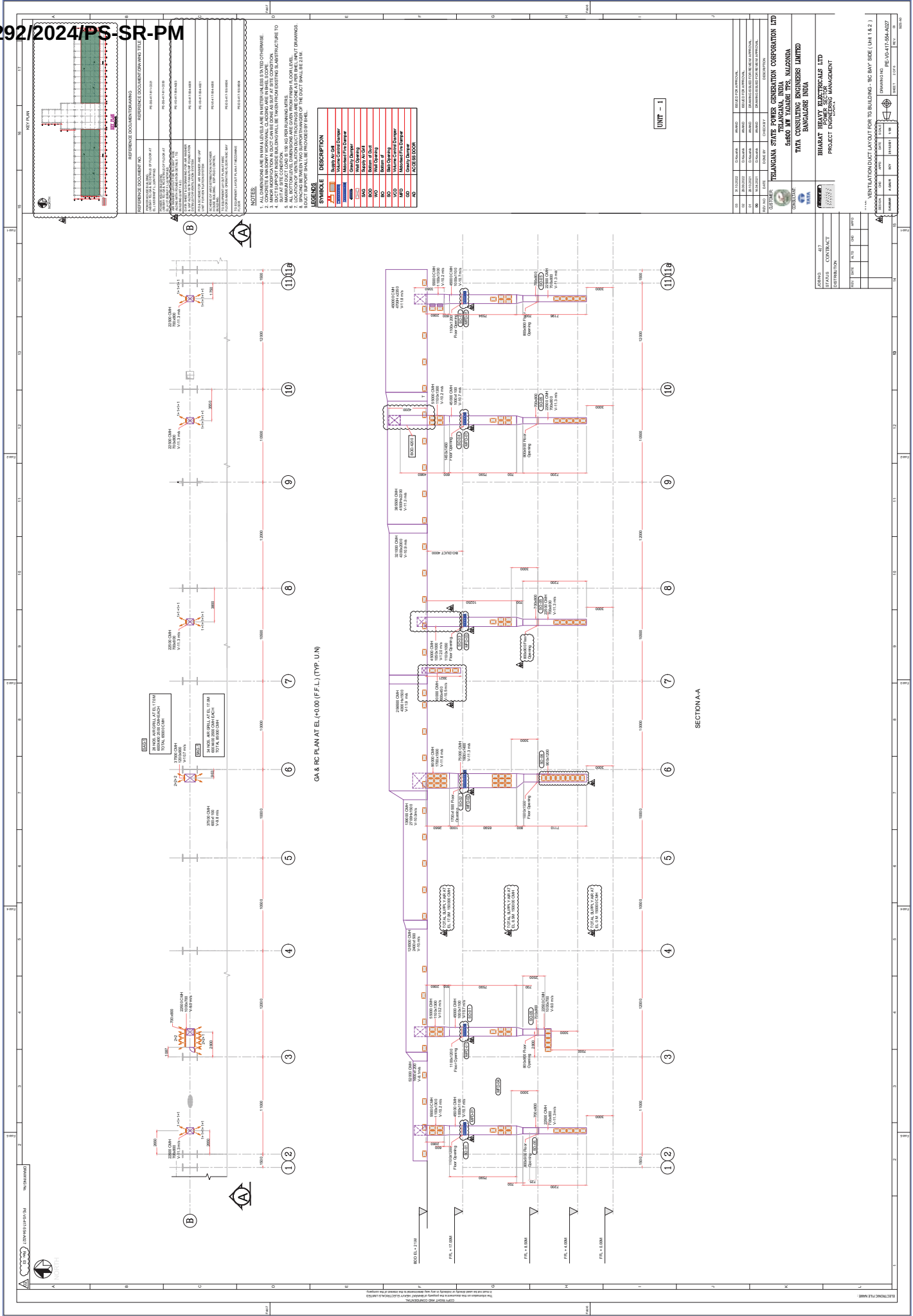
ELECTRICAL ANNEX

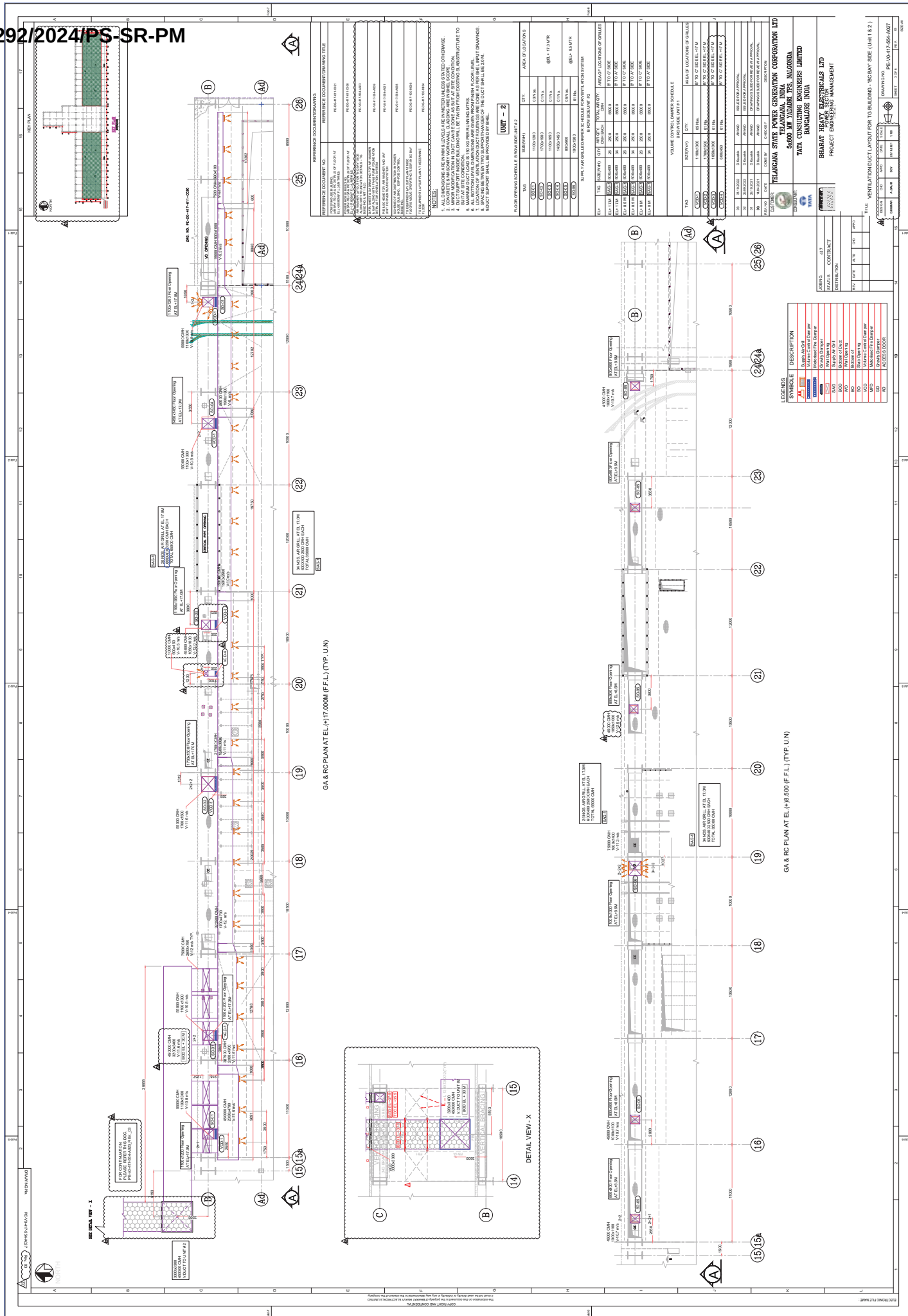
VENTILATION DUCT A ROW

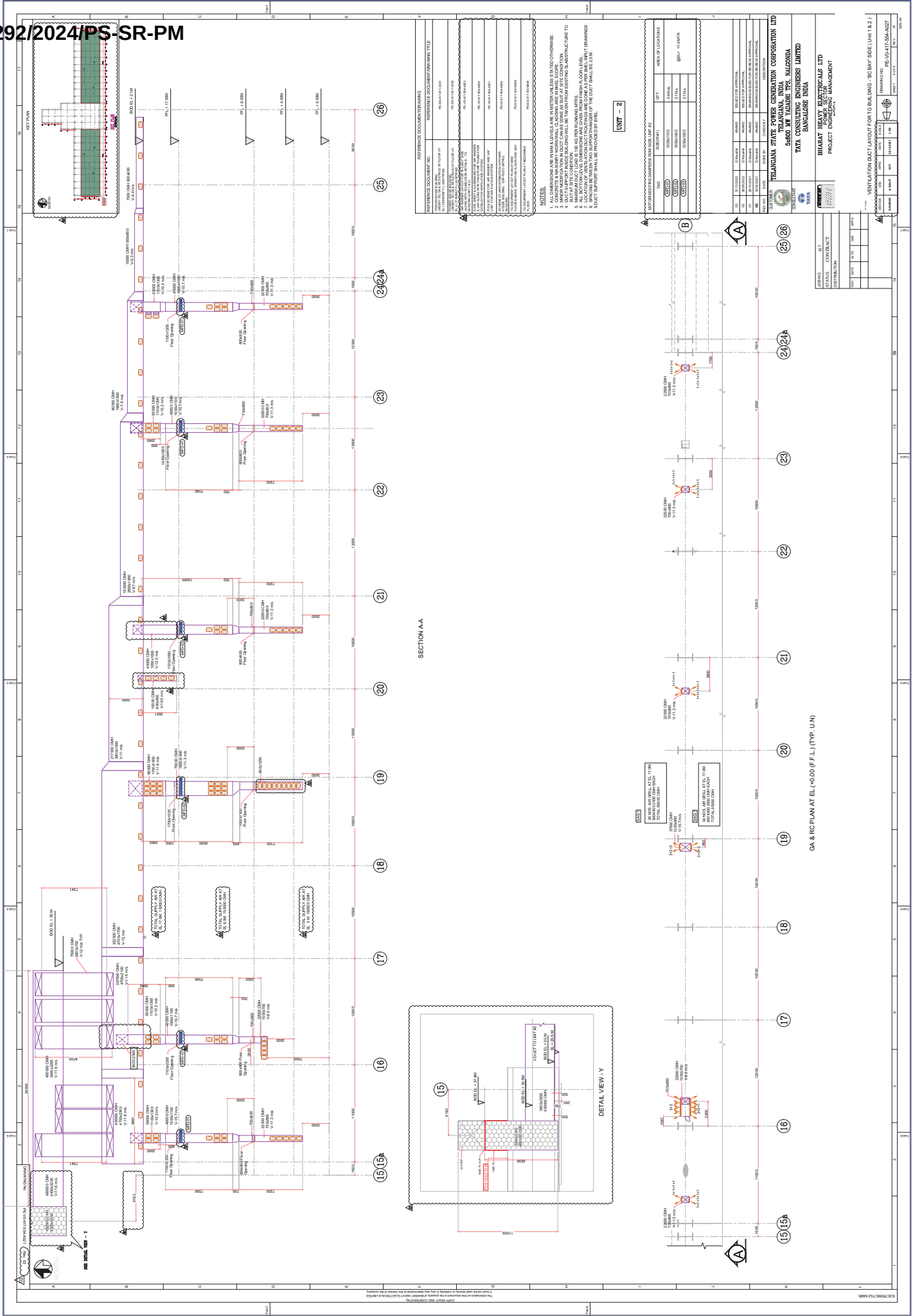
BUS DUCT



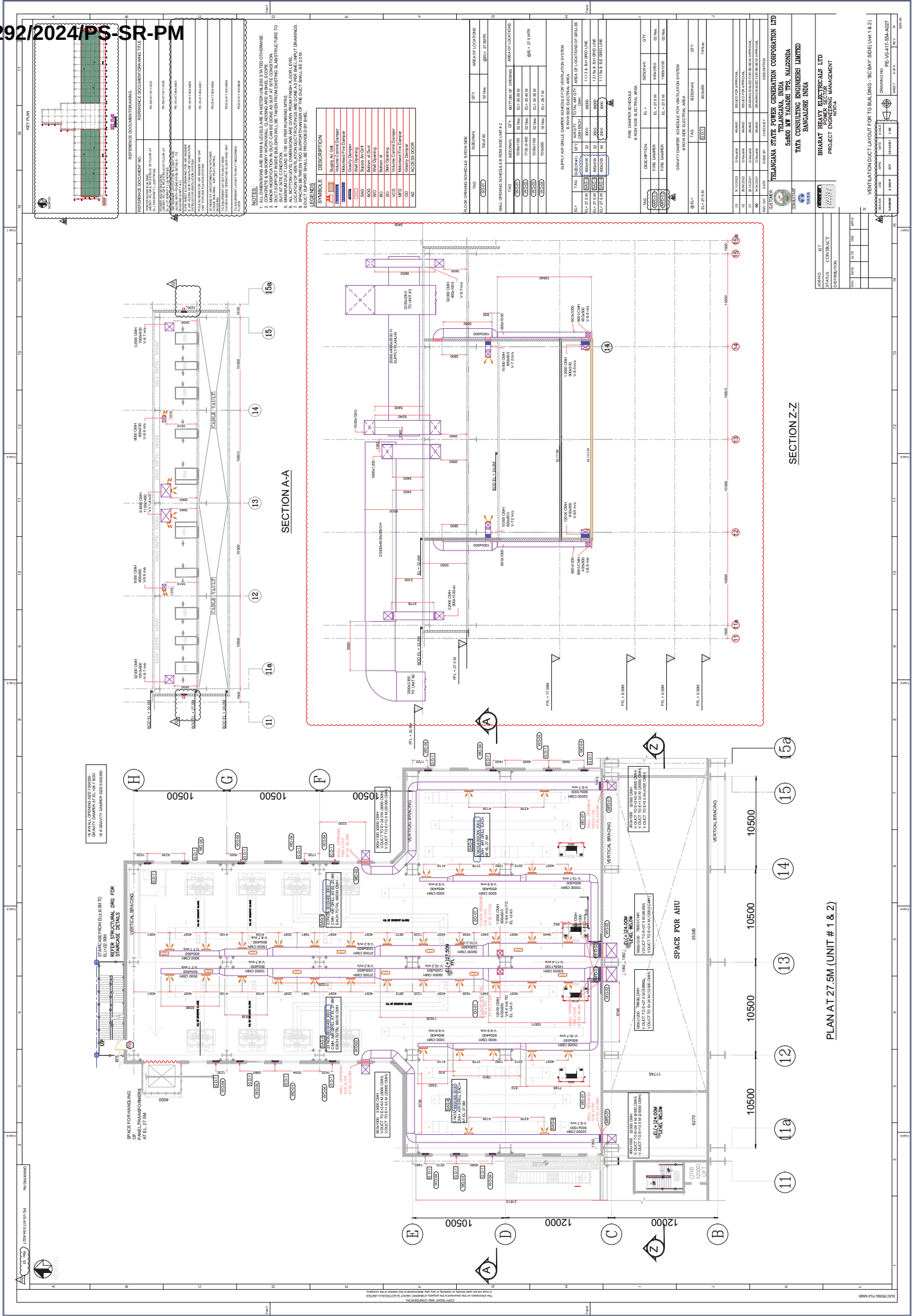






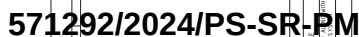


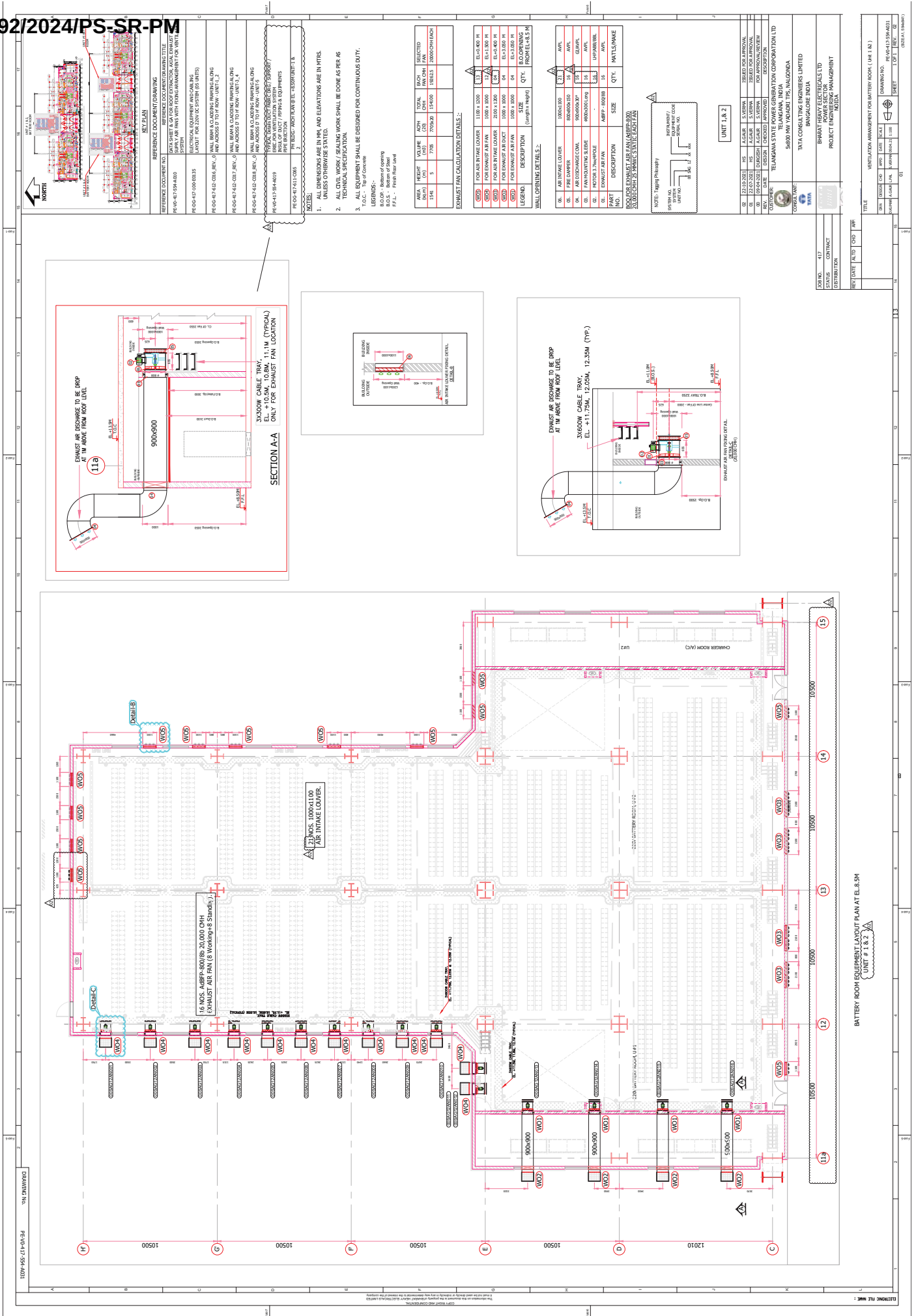




PLAN AT 27.5M (UNIT # 1 & 2)

SECTION Z-Z





NOTES:

- 1. ALL DIMENSIONS ARE IN MM.
- 2. ITEM LISTED FOR ONE FAN ONLY.
- * FAN QUANTITY AS PER APPROVED LAYOUT/ FAN SCHEDULE.

PART NO.	DESCRIPTION	QTY	MATERIAL	MAKE
01.	Steel Bird mesh - 450x450	1 no.	MS	KHANNA
02.	Propeller fan 300	1 no.	MS	KHANNA

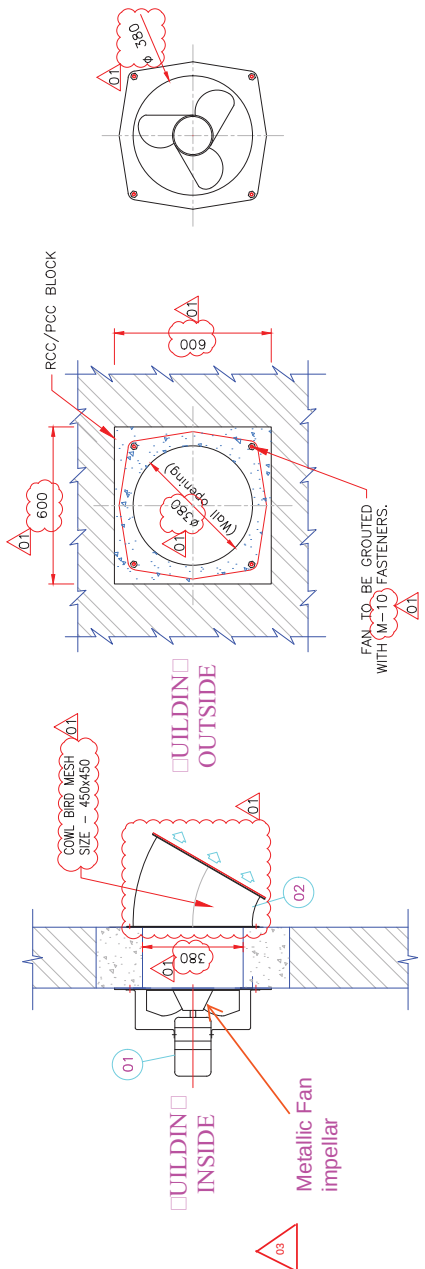
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04	15.10.24	...	...	...	...
05	15.10.24	...	...	...	...
06	15.10.24	...	...	...	...
07	15.10.24	...	...	...	...
08	15.10.24	...	...	...	...
09	15.10.24	...	...	...	...
10	15.10.24	...	...	...	...
11	15.10.24	...	...	...	...
12	15.10.24	...	...	...	...
13	15.10.24	...	...	...	...
14	15.10.24	...	...	...	...
15	15.10.24	...	...	...	...
16	15.10.24	...	...	...	...
17	15.10.24	...	...	...	...

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BANGALORE INDIA
BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
INDIA

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02	15.10.24	...	...	...	...
03	15.10.24	...	...	...	...
04	15.10.24	...	...	...	...
05	15.10.24	...	...	...	...
06	15.10.24	...	...	...	...
07	15.10.24	...	...	...	...
08	15.10.24	...	...	...	...
09	15.10.24	...	...	...	...
10	15.10.24	...	...	...	...
11	15.10.24	...	...	...	...
12	15.10.24	...	...	...	...
13	15.10.24	...	...	...	...
14	15.10.24	...	...	...	...
15	15.10.24	...	...	...	...
16	15.10.24	...	...	...	...
17	15.10.24	...	...	...	...

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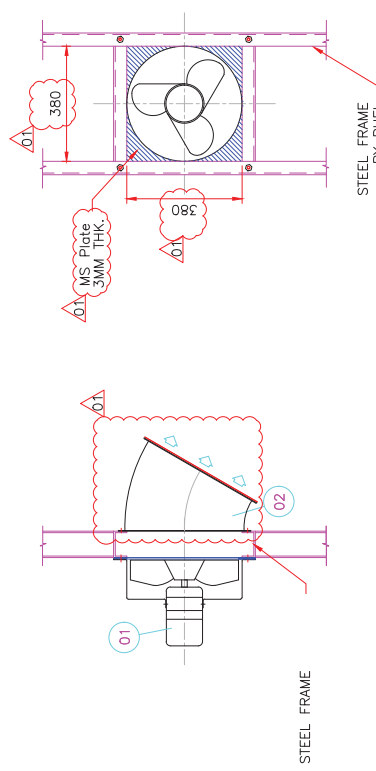
Propeller Fan



FAN FRONT DETAIL

FAN OUTLINE DETAIL

FAN ASSEMBLY DETAIL



FAN FIXING DETAIL
STEEL STRUCTURE

Capacity (CMH)	Fan dia	Phase	Fan Speed (RPM)	Qty. (Nos.)	Static Pressure (mmWG)	Motor Power (Watts)	Fan Dynamic Load (Kg.)
1200	380	Single	950	*	5	100 (Approx)	5.5

REV	DATE	DESCRIPTION	BY	CHECKED BY	APPD BY
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02	15.10.24	...	...	...	...
03	15.10.24	...	...	...	...
04	15.10.24	...	...	...	...
05	15.10.24	...	...	...	...
06	15.10.24	...	...	...	...
07	15.10.24	...	...	...	...
08	15.10.24	...	...	...	...
09	15.10.24	...	...	...	...
10	15.10.24	...	...	...	...
11	15.10.24	...	...	...	...
12	15.10.24	...	...	...	...
13	15.10.24	...	...	...	...
14	15.10.24	...	...	...	...
15	15.10.24	...	...	...	...
16	15.10.24	...	...	...	...
17	15.10.24	...	...	...	...

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POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
INDIA

571292/2024/PS-SR-PM

DATA SHEET & GA FOR ROOF EXTRACTOR, AXIAL EXHAUST AND
SUPPLY AIR FANS WITH FIXING ARRANGEMENT FOR
VENTILATION SYSTEM

Customer	Telangana State Power Generation & Corporation		Job Ref. No.	M21/DEL-069.BHEL	
Project	5 x 800 MW YADADRI		Date	15.02.2021	
Doc. No.	PE-V0-417-554-A010		Sheet	1	
Sr. No.	Description	Unit	Particulars		
1	Item		Roof Extractor (Axial flow fan)		
2	Manufacturer				
3	Model No.		AdTV-800/8B	AdTV-1000/8B	AdTV-1200/8B
4	Impeller Speed	RPM	960	960	960
5	Capacity	CMH	20000	40000	50000
6	Location & Usage		As per Approved Fan Schedule - PE-V0-417-554-A008		
7	Static pressure at 20 °C	mmWG	15	15	15
8	Velocity pressure at 20 °C	mmWG	5	9	7
9	Total pressure	mmWG	20	24	22
10	Impeller Diameter	mm	800	1000	1200
11	No. of Blade	Nos.	8	8	8
12	Type of Blade		Fixed Pitch Cast Aluminium Blade		
13	Blade Angle	Degree	27.5	25	17.5
14	Shaft Power at 20 °C	BkW	1.57	4.16	4.34
15	Fan Efficiency	%	70	70	70
16	Fan Critical Speed	RPM	1200	1200	1200
17	Bearing Type & No.		Ball Bearing (6206 ZZ & 6205 ZZ)	Ball Bearing (6208 ZZ & 6305 ZZ)	
18	Weight of Fan				
	a) Static Load	Kg	105	185	225
	b) Dynamic Load		150	225	290
19	Performance curves enclosed (yes/No)		yes		
20	Motor Data				
	a) Rating at 50 °C ambient temperature	kW/Pole	2.2/6	5.5/6	5.5/6
	b) Speed	RPM	960	960	960
	c) Type of Mounting		Foot mounting shaft upward (V6)		
	e) Direction of Rotation		Clockwise / Anti - Clockwise		
21	Material				
	a) Impeller		Cast Aluminium		
	b) Casing		MS Sheet as per IS: 1079/IS: 2062 / IS: 513, 5 mm thk.		
	c) Shaft		Motor Shaft (EN-8)		
22	Hood Thickness		3.15 mm MS		
23	Painting		Spray Galvanization (min. 60 micron DFT)		
24	Galvanized Bird screen of 15 mm sq. with Cowl		Provided		
25	Vibration level		As per ISO: 14694		
26	Accessories		Rain protection Cowl/exhaust hood, transformation piece, steel supports, bird screen		
27	Inspection & Testing		As per approved QAP		

571301/2024/PS-SR-PM

	TELANGANA STATE POWER GENERATION CORPORATION LIMITED VIDYUT SOUDHA::HYDERABAD - 500082. CIN:U40102TG2014SGC094070 Phone:040-23499261,Fax:040-23499263. Web site: www.tsgenco.co.in email id: cetpctgenco@gmail.com	
	From: The Chief Engineer, Thermal Projects Construction, 3 rd Floor, A Block, TSGENCO, Vidyut Soudha, Hyderabad – 500 082.	To: M/s Bharat Heavy Electricals Limited, Power Sector – Southern Region, BHEL Integrated office complex TNEB Road,Pallikaranai Chennai 600100,Tamilnadu E-mail: ethulasi@bhel.in

Kind Attention: E Thulasi(Manager/PM/PS-SR)

Lr.No.CE/TPC/SE-3/EME-15/YTPS(5X800MW)/FQP/D.No.40 /24, Dt:09 .02.2024

Sir,

Sub: TSGENCO-YTPS (5x800MW) - Approval of Field Quality Plan for Erection & Commissioning of Ventilation system pertaining to YTPS (5X800MW) submitted by M/s BHEL/PSSR – Reg.

Ref: 1. M/s BHEL Email Dt: 27.01.2024 (Rev.01)
 2. M/s TCE approval Dt: 06.02.2024

* * * * *

This has reference to the mail cited (1) wherein M/s BHEL/PSSR has submitted the revised Field Quality Plan (FQP) for Erection & Commissioning of Ventilation system pertaining to YTPS (5X800MW) for approval.

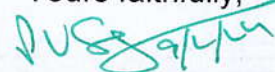
Sl. No.	BHEL reference number	Title	Rev.
1	QPE-NB-376	Field Quality Plan For Erection & Commissioning of Ventilation Package	01

The above Field Quality Plan furnished by M/s BHEL/PSSR is herewith reviewed and approved. Approved copy of the above Field Quality Plan is enclosed herewith for taking further necessary action at your end.

However, approval of the above Field Quality Plan does not absolve the responsibility of supplying the above equipment to the specifications and relevant standards and to ensure satisfactory performance of the above equipment as per the terms of the contract.

Encl: As Above.

Yours faithfully,



CHIEF ENGINEER/TPC 2/26

Copy communicated to:

1. Chief Engineer/Construction/YTPS Site/Damaracherla/Nalgonda (Dist.).
2. The Chief Engineer/Civil/Thermal/TSGENCO/VS/Hyderabad.
3. CE/Tech. to the Chairman & Managing Director/TSGENCO/VS/Hyderabad.
4. The Superintending Engineer/Civil/YTPS Site/Dameracherla/Nalgonda(Dist.).
5. The Superintending Engineer/E&M-I&II/YTPS Site/Dameracherla/Nalgonda(Dist.).
6. DE/Tech. to the Director (Projects)/TSGENCO/Vidyut Soudha/Hyderabad.
7. DE/Stores/YTPS/ Dameracherla/Nalgonda(Dist.).
8. Sri. Vinod Jacob,GM & Project Director BHEL/PSSR/ Dameracherla/Nalgonda.
9. M/s.TCE, Site office, Room No.323, Vidyut Soudha, Hyderabad.
10. Sri. S.Ravi Chandran, TCE Site / YTPS/Dameracherla/Nalgonda.

FIELD QUALITY PLAN

FOR

VENTILATION SYSTEM

(ERECTION)

FOR

YADADRI THERMAL POWER STATION (5x800MW)
TELANGANA STATE POWER GENERATION
CORPORATION LIMITED



BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR - SOUTHERN REGION
QUALITY DEPARTMENT
CHENNAI - 600100

DOC. No: QPE-NB-376
REV. No: R01/ 01-24

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FIELD QUALITY PLAN

FOR

VENTILATION SYSTEM

(ERECTION & COMMISSIONING)

FOR

**YADADRI THERMAL POWER STATION (5x800MW)
TELANGANA STATE POWER GENERATION
CORPORATION LIMITED**

PREPARED BY	M/s ADVANCE VENTILATION PVT. LTD		
REVIEWED BY	<i>G. Yadd</i> 02.01.24 Yasodha G, Manager / Quality & B.E.		
APPROVED BY	<i>Manas</i> 21/01/24 Manas Kumar Nag, Manager / Quality & B.E.		
DOCUMENT No.	QPE-NB-376	R01 / 01-24	NO OF SHEETS: ☒
CONTROLLED COPY No.:		ID No.:3183	<i>Manas</i> for (Head Quality & B.E.)
ISSUED TO:		DATE OF ISSUE	

**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR - SOUTHERN REGION
QUALITY DEPARTMENT
CHENNAI - 600 100**

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CETPL



PSSR-QUALITY

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QP No. : QPE-NB-376

REV.No.: R01

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2	Approval page	01	02
3	Contents	01	03
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5	Authorization for different categories of checks	01	05
6	Statement of checks	10	06 - 15
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10	Feedback on Field Quality Plan	01	19

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 PSSR-Quality	FIELD QUALITY PLAN FOR VENTILATION SYSTEM		QP No.: QPE-NB-376 REV. No.: R01 SHEET 1 / 1 SHEETS
AUTHORISATION FOR DIFFERENT CATEGORIES OF CHECKS			
Classification of Check -----	Inspection Agency	Clearing Agency	
Symbol	Description		
A	Critical	BHEL, QAE & Customer	Customer
B	Major	Task Performer	HOS
C	Minor	Task Performer	Task Performer
Legend: Customer: Customer or any other agency authorized by customer. BHEL : Concerned engineers of BHEL – Task Performer. HOS : Head Of Section for BHEL QAE : BHEL Quality Assurance Engineer			
NOTE : - Quantum of check shall be 100% for all characteristics unless otherwise mentioned in reference documents. - Customer shall witness A category checks. Customer is also authorized to carry out surveillance in any of the B & C category of checks at his discretion - QAE is also authorized to carry out Surveillance in any of the "B" and "C" category of checks at his discretion. - In case of non-conformity, accepting authority shells ensure dispositioning before accepting and the dispositioning shall be reflected in log sheets/protocols. - Instruments with valid calibration certificate to be used for measurements.			

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 PSSR-Quality	STATEMENT OF CHECKS	QP NO. : QPE-NB-376												
		REV.No.: 01												
		PAGE 1 OF 10												
Capacity / Type : 5 x 800 MW														
System : VENTILATION SYSTEM														
Sub-System : VENTILATION SYSTEM														
Area : ERECTION														
* For checks where log sheets are not called for, suitable records shall be maintained in the form of log book / protocols. * As an evidence of having carried out the work satisfactorily, a general-purpose log sheet L-00 shall be maintained for all the checks. * Abbreviations used in the column "Type of Check" are: R : Record Verification M : Measurement V : Visual P : Physical T : Test <u>LEGENDS USED FOR STORAGE LEVEL</u> <table border="1"> <tr> <td>STORAGE LEVEL "A"</td> <td>Outside with no protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight)</td> </tr> <tr> <td>STORAGE LEVEL "B"</td> <td>Outside with protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight), covered with PVC / Tarpaulin)</td> </tr> <tr> <td>STORAGE LEVEL "C"</td> <td>Items stored in pucca shed (Top covered)</td> </tr> <tr> <td>STORAGE LEVEL "D"</td> <td>Indoor clean conditions (stored in pucca shed, in store. The storage area shall be dry and free from dust and there shall not be acid / chemicals in vicinity)</td> </tr> <tr> <td>STORAGE LEVEL "E"</td> <td>Indoor temperature and humidity controlled - air conditioned (stored in pucca shed, in store with controlled atmosphere)</td> </tr> <tr> <td>STORAGE LEVEL "A"</td> <td>Outside with no protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight)</td> </tr> </table>			STORAGE LEVEL "A"	Outside with no protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight)	STORAGE LEVEL "B"	Outside with protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight), covered with PVC / Tarpaulin)	STORAGE LEVEL "C"	Items stored in pucca shed (Top covered)	STORAGE LEVEL "D"	Indoor clean conditions (stored in pucca shed, in store. The storage area shall be dry and free from dust and there shall not be acid / chemicals in vicinity)	STORAGE LEVEL "E"	Indoor temperature and humidity controlled - air conditioned (stored in pucca shed, in store with controlled atmosphere)	STORAGE LEVEL "A"	Outside with no protective cover (open space / yard on raised surface properly stacked and free from water logging and loading / undue weight)
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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER		TSGENCO	
		SYSTEM:		VENTILATION SYSTEM		BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION		
		AREA:		BALANCE OF PLANTS		REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.		
						PAGE : 2 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED		
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
1	2	3	4	5	6	7	8	9	10	
1.0	RECEIPT OF MATERIAL									
1.1	Verification of Documents: Shipping List / Packing List / Loading Advice / LR / Delivery Challan / CHP Reports / Despatch Clearance / MDCC	B		Review of Documents	100%	Packing Slip / Delivery Challan / CHP Reports / MDCC / Approved BBU	Compliance w.r.t Column "7"	Inward Stock Register		
1.2	Physical Checking of items / equipments (i) Packing condition (ii) Identification (iii) Type / Make / Rating / Name Plate (iv) Physical condition (v) Quantity (vi) Painting condition	B		Visual / Verification	100%	Packing Slip / Delivery Challan / CHP Reports / MDCC / Approved BBU	Compliance w.r.t Column "7"	Inward Stock Register		
1.3	Documentation & Identification for Rejection / Non Conformance items	B		Visual	100%	Packing Slip / Delivery Challan / CHP Reports / MDCC / Approved BBU	Non Conformance w.r.t Column "7"	Inward Stock Register / Rejection Note / NCR		

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		FIELD QUALITY PLAN				CUSTOMER		TSGENCO	
		SYSTEM:	VENTILATION SYSTEM		BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION		
					REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.		
		AREA:	BALANCE OF PLANTS		PAGE : 3 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED		
BHEL PSSR CHENNAI		PACKAGE			VENTILATION SYSTEM				
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
1.4	Thickness of GI Sheet (for ducting) & Grade of Galvanized Coating)	B		Measureme nt	Random	Tech Specification / drawing	Tech Specification / drawing	Inward Stock Register	
2.0	MATERIAL STORAGE		Storage Level		Periodic checks				
2.1	Check for Proper Storage level								
2.1.1	MS Structural Members	C	Storage Level 'A'	Visual	100% Every 3 months	Manufacturer's Instruction Manual	No Damage / Rust / Corrosion	Inward Sore Register	Surveillance check by FQA for all
2.1.2	Dampers, grouting, Air Washer, UAF & Internals like Baffle Eliminator, Spray Set, Header Pipe etc	B	Storage Level 'B'	Visual	100% Every 3 months	Manufacturer's Instruction Manual	No Damage / Rust / Corrosion	Inward Sore Register	items for proper storage level
2.1.3	Valves (All Water Line & Strainers)	B	Storage Level 'C'	Visual	100% Every 3 months	Manufacturer's Instruction Manual	Inward Sore Register & Free Movement of valves	Inward Sore Register	
2.1.4	GI Sheet, Grilles / Diffusers, GI , Pipe, MS Pipe (Black)	B	Storage Level 'B'	Visual	100% Every 3 months	Manufacturer's Instruction Manual	No Damage / Rust / Corrosion End Capping	Inward Sore Register	
2.1.5	Insulation Material	B	Storage Level 'B'	Visual	100% Every 3 months	Manufacturer's recommendations	No Damage / N2 Pressure to be maintained	Inward Sore Register	
2.1.6	Filter, Control Panels / MCC / PLC, Pressure Gauges / other instruments etc.	B	Storage Level 'D'	Visual	100% Every 3 months	VAM Manufacturer's recommendations	No Damage	Inward Sore Register	
2.1.7	Motors	B	Storage Level 'D'	Visual	100% Every 3 months	Manufacturer's recommendations	No Damage & Freeness of Shaft	Inward Sore Register	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER	TSGENCO	
		SYSTEM:	VENTILATION SYSTEM			BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION	
						REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.	
		AREA:	BALANCE OF PLANTS			PAGE : 4 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED	
		PACKAGE				VENTILATION SYSTEM			
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
3	G I Ducting								
3.1	Fabrication of Ducts:								
3.1.1	Marking, Cutting & Folding of Sheet / Measuring Tapes	C		Visual & Measureme nt	100%	Approved Drawing & Technical Specification	Approved Drawing	Site Register	
3.1.2	Driling of Flanges Check of Hole Dia, Pitch & No. of Holes / Measuring Tapes	C		Visual & Measureme nt	100%	Approved Drawing & Technical Specification	Approved Drawing	Site Register	
3.1.3	Final Forming of Duct Piece-dimensional Check / Measuring Tapes	B		Visual & Measureme nt	100%	Approved Drawing & Technical Specification	Approved Drawing	Site Register	Randomly check by customer
3.2	Erection								
3.2.1	Lifting-Checking of Size of Duct, Location, Orientation, Elevation / Measuring Tape, Water Level	B		Visual & Measureme nt	100%	Approved Drawing & Technical Specification	Approved Drawing	Site Register	
3.2.2	Supporting of Duct Location, Spacing, Verticality, Measuring Tapes, Plumbob	A		Visual & Measureme nt	100%	Approved Drawing & Technical Specification	Approved Drawing	Site Register	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER	TSGENCO	
		SYSTEM:	VENTILATION SYSTEM			BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION	
						REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.	
		AREA:	BALANCE OF PLANTS			PAGE : 5 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED	
						PACKAGE	VENTILATION SYSTEM		
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
3.3	Testing								
3.3.1	Leak Tightness	A		Light Test	100%	As per Leak Tightness procedure	As per Leak Tightness procedure	Inspection Report / Protocol	
4	Insulation of Duct								
4.1	Insulation								
4.1.1	Type, Thickness, Fixing Arrangement / Measuring Tapes	B		Visual & Measurement	100%	Approved Drawing	Approved Drawing	Site Register	
4.2	Erection								
4.2.1	Application of Insulation	B		Visual	100%	Approved Drawing	Approved Drawing	Site Register	
4.3	Water Pipe Line								
4.3.1	Fabrication								
4.3.1 (i)	WPS & Welder Qualification	A		Visual	100%	Approved WPS / ASME-IX	Approved WPS / ASME-IX	PQR / WQR	BHEL Approved WPS shall be followed. 1.Welder qualification test shall be witnessed by Customer. 2.Client approved electrodes brand and processes to be adopted at site.
4.3.1 (ii)	Marking, Cutting / Measuring Tapes	B		Measurement	100%	Approved Drawing	Approved Drawing	Site Register	
4.3.1 (iii)	Assembly with Fittings, Valves, Gaskets etc. Dimension / Measuring Tape	B		Measurement	100%	Approved Drawing	Approved Drawing	Site Register	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER	TSGENCO	
		SYSTEM:	VENTILATION SYSTEM			BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION	
		AREA:	BALANCE OF PLANTS			REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.	
						PAGE : 6 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED	
							PACKAGE	VENTILATION SYSTEM	
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
4.3.2	Erection								
4.3.2 (i)	Welding of Black Pipes, Valves, Fittings	B		Visual	100%	Approved Drawing	No Defect	Site Register	
4.3.2 (ii)	Butt Welds - Surface Defects	A		NDT	10%	ASME B 31.3 and NDE Manual	ASME B 31.3 and NDE Manual	Inspection Report	10% RT of all butt welds and 25% DPT of all fillet welds
4.3.2 (iii)	Routing, Location, Elevation Water Level	B		Measurement	100%	Approved Drawing	Approved Drawing	Inspection Report	
4.3.2 (iv)	Supporting of Pipes Location, Spacing, Verticality, Measuring Tapes, Plumbob	C		Measurement	100%	Approved Drawing	Approved Drawing	Inspection Report	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN				CUSTOMER		TSGENCO	
		SYSTEM:	VENTILATION SYSTEM			BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION	
			AREA:	BALANCE OF PLANTS			REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.
		CLASS OF CHECK		INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	PAGE : 7 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED
									PACKAGE
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS					REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
4.3.3	Testing								
	Leakage in Pipe Assembly	A		HT	100%	Approved Drawing	No Leakage	Inspection Report	HT pressure = 1.5x Design Pressure
4.4	Grilles / Diffusers, Filters								
	Erection								
4.4.1	Location, Elevation, Levelling & Orientation / Measuring Tapes	B		Visual	100%	Approved Drawing	Approved Drawing	Site Register	
4.5	Fire Damper								
	Erection								
4.5.1	Checking of Location, Elevation, Dimension, Orientation, Measuring Tape	B		Visual & Measureme nt	100%	Approved Drawing	Approved Drawing	Inspection Report	
4.5.2	Check Proper Operation of Louvers	A		Visual & Measureme nt	100%	Approved Drawing	Approved Drawing	Inspection Report	
4.6	Control Panel								
	Erection								
4.6.1	Identification, Positioning & levelling, Measuring Tape, Sprit Level / Water Level	B		Visual	100%	Approved Drawing	Approved Drawing	Inspection Report	

Note: In line with this FQP, Yadadri Electrical and C&I FQP to be followed as per requirement.

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER	TSGENCO	
		SYSTEM:	VENTILATION SYSTEM			BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION	
		AREA:	BALANCE OF PLANTS			REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.	
						PAGE : 8 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED	
						PAGE : 8 of 10	PACKAGE	VENTILATION SYSTEM	
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
4.6.2	Fixing / Grouting; Ensure the grouting strength	A		Cube test	100%	manufacture recontamination and grouting	Approved Drawing	Inspection Report	Fixing / Grouting with anchor fastener on wall / floor.
4.6.3	Completeness	A		Visual	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Inspection Report	
4.6.4	Checking of Earthing, Insulation, Continuity, Test Cable Connection Megger & Multimeter	A		Measurement	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Inspection Report	
4.7	Valves								
	Erection								
4.7.1	Identification of Type & Size, Location, Flow Direction	B		Visual	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Inspection Report	
4.8	LT Motor								
	Erection								
4.8.1	Checking of Rating, Leveling, Alignment with driven equipment	A		Measurement	100%	Approved Data Sheet / Drawing	Approved Drawing	Inspection Report	
4.8.2	Checking of IR Value Meggar	A		Measurement	100%	Approved Data Sheet / Drawing	Approved Drawing	Site Register / Inspection Report	
4.8.3	Cable Termination & Earthing	B		Visual	100%	Approved Data Sheet / Drawing	Approved Drawing	Site Register / Inspection Report	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN				CUSTOMER			
		SYSTEM:	VENTILATION SYSTEM		BHEL QP NO : QPE-NB-376	PROJECT	TSGENCO		
					REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.		
		AREA:	BALANCE OF PLANTS		PAGE : 9 of 10	SUB- CONTRACTOR	ADVANCE VENTILATION PVT. LIMITED		
					PACKAGE	VENTILATION SYSTEM			
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS
1	2	3	4	5	6	7	8	9	10
4.9	Pump								
	Erection								
4.9.1	Checking of Foundation Dressing, Levelling location, Grouting, Dimension, Measuring Tapes, Dial	A		Visual & Measurement	100%	Approved Drawing	Approved Drawing	Inspection Report	grouting up to pump frame / base bottom flange
4.9.2	Identification of Orientation	C		Visual	100%	Approved Drawing	Approved Drawing	Inspection Report	
4.9.3	Alignment with drive dial gauge, Spirit level	A		Measurement	100%	Approved Drawing	Approved Drawing	Inspection Report	
4.10	Air Washer System and UAF								
	Erection of Casing & Tank								
4.10.1	Checking of Foundation- Location, Foundation Dressing, Assembly & Positioning, Levelling	B		Visual	100%	Approved Data Sheet / Drawing / Mfg's Instruction Manual	Approved Data Sheet / Drawing / Mfg's Instruction Manual	Inspection Report	
	Fixing of Baffle Plate, Eliminator, Air Distribution Plate								
4.10.2	Checking of Location, Measuring Tapes	B		Visual & Measurement	100%	Approved GA drawing	Approved GA drawing	Site Register	
	Fixing of Spray Set & Accessories								
4.10.3	Checking of Location	C		Orientation	100%	Approved GA drawing	Approved GA drawing	Site Register	
4.11	Completeness of System	A		Visual	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Site Register	
4.12	Axial Fan								
4.12.1	Fixing and Measurement of Hood / Cows	C		Visual & Measurement	100%	Approved Drawing	Approved Drawing	Inspection Report	

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 BHEL PSSR CHENNAI		FIELD QUALITY PLAN					CUSTOMER		TSGENCO	
		SYSTEM:	VENTILATION SYSTEM		BHEL QP NO : QPE-NB-376	PROJECT	5X800 MWYADADRI - NALGONDA THERMAL POWER STATION		CONTRACTOR	
		AREA:	BALANCE OF PLANTS		REV NO : 01	CONTRACTOR	BHARAT HEAVY ELECTRICALS LTD.		SUB- CONTRACTOR	
					PAGE : 10 of 10	PACKAGE	ADVANCE VENTILATION PVT. LIMITED		VENTILATION SYSTEM	
Sr. No.	ACTIVITY AND OPERATION / CHARACTERISTICS	CLASS OF CHECK	INSTRUMENT	TYPE OF CHECK	QUANTUM / FREQUENCY OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE STANDARD	FORMAT OF RECORD	REMARKS	
1	2	3	4	5	6	7	8	9	10	
4.13	Painting									
4.13.1	Preparation of Surface - Synthetic Paint Type, Shade & DFT	B		Visual & Measurement	100%	Technical Specification / Painting Specification	Technical Specification / Painting Specification	Inspection Report		
4.13.2	Paint Type, Shade, DFT	A		Visual & Measurement	100%	Technical Specification / Painting Specification	Technical Specification / Painting Specification	Inspection Report		
4.14	Ensure that the equipments are in compliance with the points mentioned in the checklist and proper mechanical clearance is provided by the concerned agency	B		Visual	100%	Checklist	Checklist	Checklist		
5	Commissioning									
5.1	LT Motor									
5.1.1	Motor to be decoupled for Trail run	A		Visual & Measurement	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Site Register		
5.1.2	Checking of current , Vibration & sound									
5.2	Pump									
5.2.1	Motor to be coupled with pump for Load run	A		Visual & Measurement	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Site Register		
5.2.2	Checking of current , Vibration & sound									
5.3	Centrifugal Fan									
5.3.1	Motor to be coupled with centrifugal fan for Load run	A		Visual & Measurement	100%	Approved Data Sheet / Drawing	Approved Data Sheet / Drawing	Site Register		
5.3.2	Checking of current , Vibration & sound									

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		RECORD OF QUALITY CHECKS					
SHEET NO. OF FQP	CHECK NO.	RESULTS ACHIEVED OK / NOT OK	DRAWING / DOCUMENT REFERENCE	FORMAT OF RECORD	INSPECTED BY SIGN. & DATE	CLEARED BY SIGN. & DATE	REMARKS
Note: Any protocol made is to be numbered & mentioned in "Format of Record" column.							
		SYSTEM		SUB-SYSTEM		AREA	
PROJECT						QP NO. : QPE-NB-376	
UNIT NO.						REV. NO. : R01	
RATING						LOG SHEET NO. : L-00	
						PAGE 1 OF 1	

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PSSR - QUALITY

FEEDBACK ON FIELD QUALITY PLAN

In the Field Quality Plan for (FQP), following Checks / Log sheets may be added / rewritten / deleted (cannot be carried out / not required) due to reasons as mentioned below:

Sheet No. of FQP	Check No. / Log Sheet No.	Proposed Change / Reasons / Remarks
------------------	---------------------------	-------------------------------------

PROJECT

UNIT NO.

RATING

From:

To
Head (Quality)
PS-SR
600100

DOC.NO. QPE-NB-376

REV. NO. R01

PAGE 1 OF 1

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COMMENT RESOLUTION SHEET OF FQP

Project : TSGENCO YADADRI TPS 5 x 800 MW

Package : VENTILATION SYSTEM

FQP ref : QPE-NB-376

Sr.No.	Consultant Comments dtd 29.11.2023 on FQP R00	BHEL reply dtd 02.01.2024 [Revised FQP R01]
1	List down the Equipments & Package list in the scope of this FQP	Packing List of equipment/ materials enclosed. Annexure 1
2	Please ensure Electrical ,C&I and Commissioning related FQP should be submitted separately.	Included in FQP. Note: In line with this FQP, Yadadari Electrical and C&I FQP to be followed as per requirement.
3	S.No 3.1.1 QUANTUM / FREQUENCY OF CHECK :Please mentioned 100% everywhere in place of 50%	Noted & Incorporated
4	S.No 3.1.1 REFERENCE DOCUMENTS : Please add also technical specification along with Approved drawing every where	Noted & Incorporated
5	S.No 3.1.3 CLASS OF CHECK B	Noted & Incorporated
6	S.No 3.2.1 CLASS OF CHECK B	Noted & Incorporated
7	S.No 3.1.3 REMARKS: Randomly check by customer	Noted & Incorporated
8	S.No 3.2.2 CLASS OF CHECK A	Noted & Incorporated
9	S.No 3.3.1 REFERENCE DOCUMENTS As per Leak Tightness procedure	Noted & Incorporated
10	S.No 3.3.1 ACCEPTANCE STANDARD As per Leak Tightness procedure	Noted & Incorporated
11	S.No 3.3.1 REMARKS: Please attach the Leak Tightness Procedure along with this FQP R-01 for review and approval...	Method Statement for Leak Test is attached. Annexure 2
12	S.No 3.3.1 QUANTUM / FREQUENCY OF CHECK 100%	Noted & Incorporated
13	S.No 4.1.1 QUANTUM / FREQUENCY OF CHECK 100%	Noted & Incorporated
14	S.No 4.2.1 QUANTUM / FREQUENCY OF CHECK 100%	Noted & Incorporated
15	S.No 4.3.1 (i) 1.Welder qualification test shall be witnessed by Customer. 2.Client approved electrodes brand and processes to be adopted at site	Noted & Incorporated
16	4.3.2 (ii) -REFERENCE DOCUMENTS ASME B 31.3 and NDE Manual	Noted & Incorporated
17	4.3.2 (ii) -REMARKS - 10% RT of all butt welds and 25% DPT of all fillet welds	Noted & Incorporated
18	4.3.2 (ii) - ACCEPTANCE STANDARD ASME B 31.3 and NDE Manual	Noted & Incorporated
19	4.5.2 CLASS OF CHECK A	Noted & Incorporated
21	4.6.2 ACTIVITY AND OPERATION / CHARACTERISTICS Please add-- Activity----Ensure the grouting strength Class of check---A Type of check---Cube test Quantum of check---100% Reference documents-----manufacture recontamination and grouting procedure..	Noted & Incorporated
22	s.No 4.6.2 Class of check---A	Noted & Incorporated
23	s.No 4.6.4 CLASS OF CHECK A	Noted & Incorporated
24	s.No 4.8.1 Class of check---A	Noted & Incorporated
25	s.No 4.8.2 Class of check---A	Noted & Incorporated
26	s.No 4.9.1 Class of check---A	Noted & Incorporated

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COMMENT RESOLUTION SHEET OF FQP

Project : TSGENCO YADADRI TPS 5 x 800 MW

Package : VENTILATION SYSTEM

FQP ref : QPE-NB-376

Sr.No.	Consultant Comments dtd 29.11.2023 on FQP R00	BHEL reply dtd 02.01.2024 [Revised FQP R01]
27	s.No 4.9.3 Class of check---A	Noted & Incorporated
28	s.No 4.10.2 Class of check---B	Noted & Incorporated
29	S.No. 4.13.1 REMARKS: Please share the painting specification along with the revised FQP	1.CLEANING , PAINTING & PACKING PROCEDURE FOR AXIAL FANS, CENTRIFUGAL FANS, R E FANS, AWU & UAF is attached . Annexure 3
30	Please add this activity before start the commissioning activities..... "Ensure that the equipments are in compliance with the points mentioned in the checklist and proper mechanical clearance is provided by the concerned agency. Format of records = Checklist Fill the other relevant columns accordingly."	Noted & Incorporated

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks	
1	Centrifugal Fan (Capacity 140000 CMH at 85 MM WC) with Accessories	16		
2	Electric Motor 55 KW/4Pole for centrifugal fan 140000 CMH at 85 mm WC	16		
3	AWU double skin enclosure with accessories.	8		
4	Water tank	8		
5	Air Pre filter 610x610x50 - 72 Nos & 610x305x50 - 18 nos. in one set)	8		
6	Air Intake Louver	8		
7	Air washer accessories (Air Distribution plate, Spray piping, nozzles, eliminator etc).	8		
8	Valves & Strainers for Air Washer Units	8		
9	Gate Valve - 250 NB	16		
10	Gate Valve - 200 NB	8		
11	Gate Valve - 40 NB	32		
12	Globe Valve - 200 NB	16		
13	Non Return valve - 200 NB	16		
14	Butter Fly Valve - 200 NB (Motorized)	16		
15	Pot Strainer - 250 NB	16		
16	Centrifugal pump for Air Washer Unit (310 M3/HR at 30 M Head)	16		
17	Centrifugal pump motor for A/WU of 45 KW/4Pole	16		
18	Centrifugal Fan (Capacity 1,00,000 CMH at 60 MM WC) with Accessories	2		
19	Electric Motor 30 KW/4Pole for centrifugal fan 1,00,000 CMH at 60 mm WC	2		
20	UAF single skin enclosure with accessories.	2		

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks	
21	Water tank	2		
22	Air Pre filter (610x610x50 - 30 Nos. in one set)	2		
23	Air Intake Louver	2		
24	Air washer accessories (Air Distribution plate, Spray piping, nozzles, eliminator etc).	2		
25	Valves & Strainers for UAF Units	1		
26	Gate Valve - 125 NB	4		
27	Gate Valve - 100 NB	2		
28	Gate Valve - 40 NB	8		
29	Globe Valve - 100 NB	4		
30	Non Return valve - 100 NB	4		
31	Butter Fly Valve - 100 NB (Motorized)	4		
32	Pot Strainer - 125 NB	4		
33	Centrifugal pump for UAF Unit (77 M3/HR at 30 M Head)	4		
34	Centrifugal pump motor for UAF Unit of 15 KW/4Pole	4		
35	Supply air ducting 18 G Ducting with support structure etc.	10200		
36	Supply air ducting 20 G with support structure etc.	10250		
37	Supply air MS Grilles with VCD	190		
38	Exposed duct insulation with fibre glass insulation as per specifications.	4765		
39	Wall mounted dampers (gravity operated) for different areas.	25		
40	Inlet Louvres	210		

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks	
41	VOLUME CONTROL DAMPERS in GI construction as per specifications	175		
42	FIRE DAMPER	62		
43	FIRE DAMPER-Motorized Actuator	64		
44	Roof extractor units with 15 mmwc static pressure.Capacity 50,000 CMH	47		
45	Roof extractor unitswith 15 mmwc static pressure.Capacity 20,000 CMH	11		
46	Axial flow supply fans with pre and fine filter (wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply). Following fan shall have 30 mmwc static pressure.Capacity 10,000 CMH	25		
47	Axial flow supply fans with pre and fine filter (wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply). Following fan shall have 30 mmwc static pressure.Capacity 7,500 CMH	14		
48	Axial flow supply fans with pre filter (wall mounted wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply) as specified. Following fan shall have 20 mmwc static pressure.Capacity 15,000 CMH	6		
49	Axial flow supply fans with pre filter (wall mounted wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply) as specified. Following fan shall have 20 mmwc static pressure.Capacity 10,000 CMH	7		

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks	
50	Axial flow supply fans with pre filter (wall mounted wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply) as specified. Following fan shall have 20 mmwc static pressure.Capacity 7,500 CMH	5		
51	Axial flow supply fans with pre filter (wall mounted wall mounted fan filter unit) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen and all other accessories (suitable for 415V/3-phase supply) as specified. Following fan shall have 20 mmwc static pressure.Capacity 6,000 CMH	7		
52	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 15,000 CMH	21		
53	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 10,000 CMH	6		
54	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 6,000 CMH	9		

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	PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER	TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks
55	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 4,000 CMH	6	
56	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 7500 CMH	16	
57	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.Capacity 2000 CMH	65	
58	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 25 mmwc static pressure.Capacity 20,000 CMH	11	
59	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq. cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 10 mmwc static pressure.Capacity 15,000 CMH	12	

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA		
SL. No.	Description of Equipment / Material	Qty	Remarks	
60	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq. cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 10 mmwc static pressure.Capacity 10,000 CMH	2		
61	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq. cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 10 mmwc static pressure.Capacity 7,500 CMH	15		
62	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq. cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 10 mmwc static pressure.Capacity 2,000 CMH	2		
63	Exhaust fan (propeller type) completes with induction motor & mounting frame MS rain protection cowl, bird screen and all other accessories as specified (suitable for 240V/ 1 phase). Following fan shall have 5 mmwc static pressure.Capacity 1200 CMH	150		
64	Handling arrangement for Ventilation system. Manual operated trolley, platform trolley of 1 ton capacity with base area 2mx1.5m.	2		
65	Handling arrangement for Ventilation system.1 T Chain Pulley Block with tripod stand (with Travelling trolley).	1		
66	Handling arrangement for Ventilation system.1 T Chain Pulley Block with tripod stand (without Travelling trolley).	2		
67	FIELD INSTRUMENTS like gauges, switches, transmitters for measurement of pressure , temperature, pressure, differential pressure, flow etc. and other instruments as required for completeness of Ventilation System (For stage - I)	1		
68	Differential Pressure Transmitter	20		
69	Temperature Indicator	20		
70	Pressure Transmitter	40		
71	Temperature gauge	10		

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		PACKING LIST OF EQUIPMENT / MATERIALS		ADVANCE VENTILATION (P) LIMITED Khasra No. 22/21/1,21/2,22/22/1,22/2 Village-Nathupur, Sonapat, haryana- 131029 Phone : 91-130-219092-96	
CUSTOMER		TSGENCO - 5x800 MW YADADRI TPS - NALGONDA			
SL. No.	Description of Equipment / Material	Qty	Remarks		
72	Pressure Indicator	20			
73	Level Transmitter	10			
74	Any other item not indicated above, but required to make the system complete in all respects.	1			

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Annexure 2

**ADVANCE VENTILATION PVT LTD.****Method Statement for Leak Test****1. PURPOSE :**

The following procedure is adopted for carrying out the Leak test to ensure that the AC ducts are free from any leakage at joints and the duct work which is to be performed before applying the thermal insulation for the ducts.

2. QUALITY CONTROL :

Continuous supervision and frequent inspections should maintain the specified standards and according to approved drawings within the time frame of project program / schedule. Also, the works should be carried out in compliance with the approved Quality Assurance Plan.

3. SAFETY :

- All personnel must wear hard hat at all time while at site.
- All personnel and operatives shall wear safety footwear / shoes.
- Work areas and access ways are to be free from debris, material and any sorts of hazards.

4. TOOLS & EQUIPMENT :

- Halogen Lamp.
- Sealant
- Gaskets
- Double ended & ring/socket spanners.
- Scaffolding.

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5. EXECUTION METHOD STATEMENT

- The section of ducts to be tested is to be isolated from the rest of the air Distribution system before undertaking the Leak test.
- It should be ensured that all joints in the ducts have been provided with Gaskets and all corners and seams are sealed off by applying the sealant.
- The Halogen lamp is connected to 230Volts AC supply.
- The Light produced / generate by the lamp and injected into the duct from the open end so that the entire duct is filled with the Light.
- All joints are then inspected and any leaking joints are repaired by applying Additional sealant, Tightening the bolts or replacing the damaged gaskets, if required.
- If any seams or corners are found leaking, the same are sealed properly and the test is repeated by injecting the Light again till no leak is observed at any joints of the ducts.
- The Light thus retained can be released after the observations are Complete and the duct is found to be leak free.

For Advance Ventilation Pvt. Limited



Anand Gaur
Advance Ventilation Pvt Ltd



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	CLEANING , PAINTING & PACKING PROCEDURE FOR AXIAL FANS, CENTRIFUGAL FANS, R E FANS, AWU & UAF
Project	: 5 x 800 MW TSGENCO YADADRI TPS

A. Objective:

The objective of this specification is to define the requirements for the cleaning, Protective painting And wrapping of (i) Axial fans (ii) Centrifugal fan & (iii) Roof Extractor (iv) AWU & UAF water tanks & internals

B. Scope:

This document specifies the minimum requirements of the surface Preparation paint coating including the quality control norms.

Painting of Fans and steel structures, units is been complete as per the requirement specification of the project document. Since the steels in this applicable are general and for outdoor/ external Installation, The maximum temperatures to which these are subjected, is less than 100 deg. C.

C. Paints being used

Paints of required composition / specification; as available in this zone are being used. Care is taken for procurement of these paints of reputed make only; and BERGER IS selected, being the best Product.

1. Primer: Epilux 610 Primer; a two pack anti corrosive epoxy primer is used for base /first coating on dry surfaces after preparation.

Berger protection paint data sheet no. 049 is adopted

D. Cleaning & Painting procedure

The below given steps in this painting applicable are adopted

1. Surface of the structures is prepared for painting; through pickling and phosphate cleaning.

The steel structures surface is cleaned; until it becomes free of all visible oil/ grease; mill scale, Rust, corrosion products and other foreign matter. The comparison viewing / check is done and accepted as per the provisions of surface pervasion of surface preparation standards :

Prepared By Manjeet Kumar	Checked by Md. Tabrez	Approved By Md. Tabrez
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	CLEANING , PAINTING & PACKING PROCEDURE FOR AXIAL FANS, CENTRIFUGAL FANS, RE FANS, AWU & UAF
Project	: 5 x 800 MW TSGENCO YADADRI TPS

SSPC-SPI – Solvent Cleaning

SSPC – SP2 – Hand Tool Cleaning

SSPC – SP3 – Power Tool Cleaning

2. Primer coating is done on to the clean phosphate surface of the steel member; using Zinc rich epoxy primer; 2 coats; each in 30 microns thickness.
3. Intermediate and finish coat painting is to be done at 60 microns each to achieve the DFT as per the specification.
4. Final Dry film thickness (DFT) of the factory painting shall not be less than 180 microns.

ADHESION TEST: Adhesion test shall be carried out as per ASTM D3359 and the acceptance criteria will be 3A IN X-Cut Method.

E. SAFETY:

- Painting should be carried out in an enclosed ventilation area.
- Do not smoke or ignite flame near painting area.
- All PPE Should be wear at the time of painting.

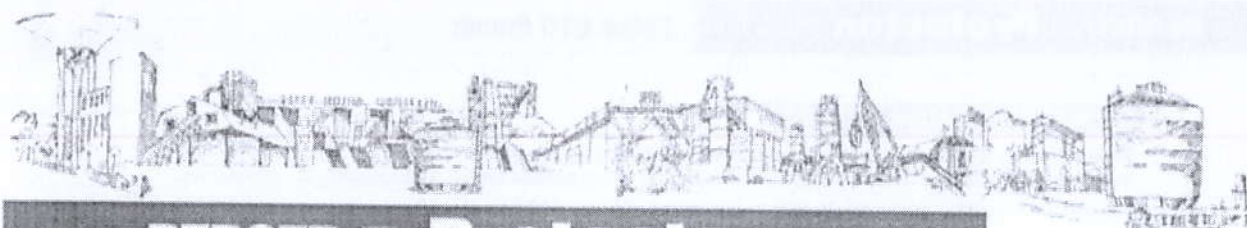
F. PACKING:

Finished item / Components are generally stretch film wrapped & bubble film packed for dispatch purpose.

* * * * *

Prepared By Manjeet Kumar	Checked by Md. Tabrez	Approved By Md. Tabrez
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BERGER Protecton PROTECTIVE COATINGS

Epilux 610 Primer

USES

Epilux 610 Primer possesses a history of success in various fertilizer, refineries, chemical and other plants applied in diverse areas – tanks, equipment, pipelines, structural steel, etc.

SCOPE

A two pack anticorrosive epoxy primer for use on steel surfaces. This primer is ideally designed for offering superior performance in highly corrosive chemical and coastal environments. It can be overcoated with epoxy, chlororubber and polyurethane top coats.

PRODUCT DATA

Type : Two Pack, cured with Polyamide

Composition : Catalysed epoxy resin/Zinc Phosphate

Mixing Ratio : Base : Catalyst – 3 : 1 by volume

Pot Life : 5–6 hours

Application : Brush, Airless or Conventional Spray

Recommended DFT : 25–35 microns per coat

Corresponding WFT : 57–80 microns per coat

Theoretical Spreading Rate : 12.6–17.6
Sq. Mtr./Ltr./Coat

Drying Time :

TOUCH : 1 hours
HANDLE : 4 hours
HARD : Overnight

Curing Time : 6–7 days

Overcoating Interval :

MIN : Overnight
MAX : Indefinite

Flash Point : Above 22° C

Colour : Red Oxide & Grey

Finish : Matt

Packing : Red Oxide - 20 Ltrs. & 4 Ltrs.
Grey - 20 Ltrs.

Thinner/Cleaner : Thinner 844

Storage Life : Upto twelve months as long as the sealed containers are kept under cover in a dry place under normal temperature conditions.

RESISTANCE GUIDE

Chemical Resistance :

EXPOSURES	SPLASH & SPILLAGE	MILD FUMES / OUTDOOR RESISTANCE
Acids	Good	Good
Alkalis	Good	Good
Solvents	Very Good	Very Good
Salt	Very Good	Very Good
Water	Very Good	Very Good

Temperature Resistance :

Continuous : 93° C
Intermittent : 120° C

Weatherability : Very good with suitable top coat

Flexibility : Good

Abrasion Resistance : Fair

DATA SHEET No. : 040
Issue Date : Mar. 04

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SURFACE PREPARATION

Steel : Remove grease, oil and other contaminants preferably by using Bison Degreasing Solvent. Blast clean to a minimum of Sa 2 1/2 Swedish Standard SIS 05 5900 with a surface profile not exceeding 35–40 microns.

The surface should be clean and dry before application of Epilux 610 Primer.

APPLICATION

Stir the base thoroughly and then mix three parts of base and one part of catalyst by volume to uniform consistency. Allow the mixture to mature for 30 minutes and stir again before application and occasionally during use.

Brush : Apply without thinning.

Conventional Spray : Add upto 15% Thinner 844 depending on conditions. Use any standard equipment at an atomising pressure of 3.5–4.9 Kg/cm².

Airless Spray : Apply preferably without thinning. However, upto 5% Thinner 844 may be added if absolutely essential depending on conditions. Use any standard equipment having pump ratio 30 : 1. Tip size 0.38–0.43 mm. Tip pressure 110–160 Kg/cm².

TYPICAL PAINTING SPECIFICATIONS

Surface	1st Coat	2nd Coat	3rd Coat	4th Coat
Steel	Epilux 610 Primer	Epilux 4 HB/155 HB MIO	Epilux 4 CR Enamel	Epilux 4 CR Enamel
-do-	-do-	Epilux 155 HB or Epilux 4 HB or Bergerthane	Epilux 155 HB or Epilux 4 HB or Bergerthane	
-do-	-do-	Epilux 5 CTE or Epilux 555 CTE HB	Epilux 5 CTE or Epilux 555 CTE HB	
-do-	-do-	Epilux 610 Primer	Epilux 78 HBTL	Epilux 78 HBTL
Galvanised Iron & Aluminium	Degrease and abrade the surface. Apply a coat of Bison Wash Primer followed by any of the above systems.			

Notes :

1. Use off the mixed paint within the stipulated pot life period.
2. Do not apply when temperature falls below 10° C or rises above 50° C and when relative humidity rises above 90%. Do not apply during rain, fog or mist.
3. Brushes and Spray equipment should be cleaned with Thinner 844 otherwise equipment is likely to be damaged.

Health & Safety : Please refer to the separate Safety Data Sheet available with detailed information.

DISCLAIMER

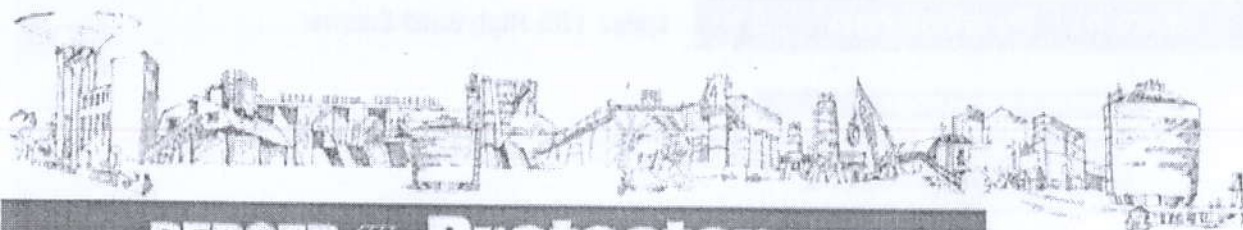
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BERGER PAINTS INDIA LIMITED

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BERGER Protecton PROTECTIVE COATINGS

Epilux 155 High Build Enamel

USES

Recommended for application on structural steel, pipelines, storage tanks, etc., subjected to aggressive environment. Suitable for application on concrete walls and columns. Can be used in fertilizer plants, chemical units, tank farms, offshore installations and various other industries including aqua culture.

SCOPE

A two pack epoxy high build coating with excellent resistance to severe coastal and industrial environments. Unaffected by a broad range of corrosive chemicals and solvent exposure, it is recommended for protection from fumes, splash and spillage.

PRODUCT DATA

Type : Two Pack, cured with Amine Adduct
Composition : Catalysed epoxy resin, suitably pigmented
Mixing Ratio : Base : Catalyst – 3 : 1 by volume
Pot Life : 4–6 hours
Application : Brush, Conventional or Airless Spray
Recommended DFT : 50–60 microns per coat
Corresponding WFT : 106–128 microns per coat
Theoretical Spreading Rate : 7.8–9.4 Sq. Mtr./Ltr.
Drying Time :
TOUCH : 3–4 hours
HANDLE : 8–10 hours
HARD : Overnight
Curing Time : 7 days
Overcoating Interval :
MIN : Overnight
MAX : 5 days
Flash Point : Above 22° C
Colour : Assorted shades
Thinner/Cleaner : Thinner 844
Finish : Egg-shell
Storage Life : Upto twelve months as long as the sealed containers are kept under cover in a dry place under normal temperature conditions.

RESISTANCE GUIDE

Chemical Resistance :

EXPOSURES	SPLASH & SPILLAGE	MILD FUMES / OUTDOOR RESISTANCE
Acids	Good	Very Good
Alkalis	Very Good	Excellent
Solvents	Excellent	Excellent
Salt	Very Good	Very Good
Water	Very Good	Very Good

Temperature Resistance :

Continuous	: 93° C
Intermittent	: 120° C

Weatherability : Good in combination with a suitable inhibitive primer

Flexibility : Good

Abrasion Resistance : Very Good

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BERGER **Protecton** PROTECTIVE COATINGS**Epilux 155 High Build Enamel****SURFACE PREPARATION**

Steel : Remove grease, oil and other contaminants preferably by using Bison Degreasing Solvent. Blast clean to a minimum of Sa 2 1/2 Swedish Standard SIS 05 5900. For severe corrosive conditions, blast to Sa 3 with a surface profile not exceeding 35-40 microns.

If blasting is not practical, make full use of mechanical tools along with manual chipping and wire brushing to remove loose rust and scale to St. 2 Swedish Standard SIS 05 5900. Excessive burnishing of steel is to be avoided. Thoroughly dust down all surfaces. Best results can be achieved if the manually cleaned surface is primed with Protectomastic - Self Priming Surface Tolerant Coating. The surface should be clean and dry before application of appropriate coat.

Concrete : **NEW CONCRETE** : Ensure that the concrete is cured for a minimum of three months. Surface is to be made rough and free from laitance and other contaminants by sand sweeping. **OLD CONCRETE** : Remove all salt deposits from the surface by water jet washing. Light sand blast the surface to remove all loosely bound coatings and roughening up of firmly adhering coatings to ensure anchorage with recommended system. Ensure all dust/other particles are fully removed by suction or air blast and the surface is fully clean and dry before application of paint. In non-critical areas where blasting is not possible water jet washing and hard wire brushing are minimum requisites.

APPLICATION

Stir base thoroughly and then mix three parts base and one part catalyst by volume to uniform consistency. Allow the mixture to mature for 30 minutes and stir again before application and during use.

Brush : Add upto 5% Thinner 844 if required during application.

Conventional Spray : Add upto 15% Thinner 844 depending on conditions. Use any standard pressure pot equipment at an atomising pressure of 3.7-4.9 Kg/cm².

Airless Spray : Apply preferably without thinning. However, upto 5% Thinner 844 may be added if absolutely essential, depending on conditions. Use any standard equipment having pump ratio 40 : 1. Tip size 0.43-0.53 mm. Tip pressure 110-160 Kg/cm².

TYPICAL PAINTING SPECIFICATIONS

Surface	1st Coat	2nd Coat	3rd Coat
Steel	Zinc Anode 304 or Epilux 4 Z/R Primer	Epilux 155 HB	Epilux 155 HB
-do-	Epilux 610 Primer or Epilux 13 Primer	-do-	-do-
-do-	Protectomastic	-do-	-do-
Concrete or Plastered Surfaces	Epilux 4 Clear Lacquer	-do-	-do-
Galvanised Iron or Aluminium	Degrease and abrade the surface. Apply a coat of Bison Wash Primer followed by any of the above systems excluding the primer coats.		

Notes :

1. Use off the mixed paint within the stipulated pot life period.
2. Do not apply when temperature falls below 10° C or rises above 50° C and when relative humidity rises above 90%. Do not apply during rain, fog or mist.
3. Brushes & spray equipment should be cleaned with Thinner 844 otherwise equipment is likely to be damaged.

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SAMPLE FORMAT



Ref no.	
Date:	
<u>PAINTING REPORT</u>	
Package	-
Project	-
Item	-
Activity	-Painting
PO NO	-
This is to certify that the subject Centrifugal fan/axial fan, all accessories Parts painted as per approved procedure.	
Surface Preparation-	
Primer DFT -	
Finish paint DFT -	
Final DFT observed:	

Working conditions-

Temp. =

RH =

DBT =

WBT =

For Advance Ventilation Pvt. Ltd,



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